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THE SYRIAN CAMPAIGN.¹

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THE Syrian campaign was of great importance, but, as with other operations against the Vichy French, such as that at Madagascar, publicity has been meagre for political reasons.

Consider the military situation in this area during the middle months of 1941. Iraq was on fire; Rommel was threatening Egypt through northern Africa, and the Axis forces had swept through Greece across Crete—a convergent drive on the Caucasus which by a south-easterly swing would by-pass southern Russia through the Levant. Neutral Turkey, the eastern shores of the Mediterranean and Egypt were the bastions against this onslaught, and Syria, controlled by the Vichy French, was the easy and direct corridor to the rich prize of the oil fields. The map (Figure 1) demonstrates the importance of Syria in this area.

Before (like the elderly ladies in the guest house) we discuss our operations, let us consider the site of election where the incision was made—Syria, a country interesting in geographical features, rich in historical romance and glorious in its beauty.

Syria.

Geographically, Syria presents the predominant features of two parallel mountain ranges—the Lebanons along the coast and the Anti-Lebanons some forty miles inland to the east. Between these ranges, running approximately north and south, lies portion of the Great Rift Valley.

At some remote period in the world's history a huge upheaval subsided in this region, leaving a cleft in the earth's surface, which extends from the Taurus mountains

in Turkey to Tanganyika in Africa. Down through Syria this rift passes—as the Ghab in the north, as the Bekaa plain below Baalbeck, through Palestine as the Jordan Valley, falling to sea level just north of Lake Tiberias, and some twelve hundred feet below at the Dead Sea. To the south, this valley splits Sinai from the Hegaz by the Gulf of Akaba, crosses the floor of the Red Sea into Africa and peters out among the lakes of Kenya and Tanganyika. Along this valley flow three main rivers, to the south the Litani and the Jordan, and to the north the Orontes, which courses through a series of swamps to Antioch. (In Syria "ch" is pronounced soft—for example, "Antioch", "patriarch".)

The coastal plain is nowhere extensive. Narrowing from the north about Latakia, it rarely exceeds half a mile in width; to the south in Lebanon the mountains fall precipitously into the sea about Iskandaroun at the ladder of Tyre. Inland to the east beyond the Anti-Lebanons stretches the sandy waste of the Syrian desert, broken in the south by the mountains or Jebels of the Druze area.

Along the Turkish border flourish forests of pine and of oak. The Lebanon mountains below the snow line are extensively terraced and thickly covered with olive trees (some of great age), pines, wild holly and a stunted Lebanon oak. Among these woods are found anemones (mauve and red and white), wild violets, crocuses, small orchids, azaleas, double pink oleanders and a small wild mauve carnation—the parent of all our lovely garden blooms.

The famous cedars of Lebanon, the forests which furnished the glory of Solomon's temple, the forests for which nations fought in the past, are almost extinct. Crossing the saddle from Baalbeck to Tripoli, we see a small dark patch on the slope below—7,000 feet above the blue Mediterranean, which shimmers in the distance. These are the few remaining trees, some four hundred in all, many of great girth.

Tyre and Sidon, cities of past Phœnician power, still build their ships around great wooden ribs set on the shores.

¹Read at a meeting of the Victorian Branch of the British Medical Association on April 7, 1943.

Beyrouth, older than the Roman Empire, a city of some two hundred thousand people, has the setting of a gem with the glorious frame of the towering Lebanons rising nine thousand feet above the wide sweep of the Bay of Saint George. This saint was revered in Syria long before the English crusaders came in the eleventh century. As Richard Cœur de Lion moved down the coast from Antioch, he heard of this Roman martyr who chose death from the lions in preference to a retraction of his Christianity and was said to be buried at Lydda. Richard adopted Saint George as his patron saint.

Tripoli, held by the crusaders after the disaster of Hattim, hides its fascination in the dark alleys of the old bazaars. It was originally founded on the sea at El Mina, but the Mamelukes moved the city to the foothills as a safeguard from sea attack.

Latakia to the north, the centre of the Alawites, famed for its dark tobacco and cotton, in spite of its Phœnician-Roman-Arab-crusader historical associations, is rather dull, decadent and uninspiring.



FIGURE I.
Sketch map of the Mediterranean Sea.

On the Ghab plain to the north we come suddenly on Aleppo, the largest and in many ways the most fascinating city of Syria. With its wide streets and the charming wrought-iron grills of the solid stone houses, with its miles of bazaars or *soucs* around the old stables of Marco Polo, with the glorious glow of the setting sun on the rose-coloured stones of the old citadel, this city grows and grows in its attraction.

To the south, on the watershed between the Orontes and the Litani, stands the lord of the plain—the Ba'al of the Beka. In contrast to the quiet culture of the Greek ruins at Gerash in Transjordan, Baalbeck—brazen and blatant—still challenges the world with its stark columns and the magnificent pagan stonework in the Temple of Bacchus.

Damascus, the oldest continually inhabited city in the world, set among gardens of flowering apricots, peaches and almonds, with its streets thronged with Druse from the mountains, with its association of Saint Paul and the street called Straight, with its crowded and colourful bazaars—this city on the Barada is a sudden oasis in a waste of sand beyond the Anti-Lebanons.

Among these cities and in villages live some three million people of seventeen recognized religions; but no accurate census has ever been taken.

In Syria, there has been no developed production of iron or coal, although both are available. Agriculture is the main industry; there are the inevitable fat-tailed sheep which carry hair, not wool, the goats, the camels and the cattle, silk, cotton, olives and tobacco. For approximately nine months of each year no rain falls. The wadis become beds of dried white stones. Towards December comes the wet season, with bitter cold and snow in the mountains—sometimes even down to the beaches. For many months the Lebanons present opportunities for winter sport probably unparalleled in the world. From Ain Sofar, above Beyrouth, skiers may leave the long snow-clad slopes and within three-quarters of an hour bathe with comfort in the comparative warmth of the Mediterranean.

The earliest dwellers in this region lived on the mountain slopes. Traces of these troglodytes still remain. Along the coast one of our battalions sheltered in these caves and paid the penalty with an outbreak of relapsing fever.

Without the control of this area, whose coast commanded the mastery of the eastern Mediterranean and whose forests furnished the richest of timber, no nearby nation felt secure.

About 3000 B.C., in from the Arabian desert swept a Semitic wave, and down from Dalmatia via Crete came a race of seafaring people, the Phœnicians, who settled about the coast and mountains of what we now know as Lebanon. Partly because this region was relatively inaccessible, partly because these Phœnicians were prepared to pay tribute to the various invaders, and partly because of their preeminent ability to build and to sail ships, these people long resisted the submergence of their race—an inevitable fate of dwellers in other parts of Syria. These sea traders spread through the then known world the products of the Levant, both material and cultural—the rich Tyrian purple from the snails of the coastal streams, their newly discovered glass, the spices and textiles of the East, the beginnings of the alphabet and calculation and the knowledge of astronomy. To this day the true Lebanese are very jealous of the purity of their Phœnician stock.

When Egypt, the earliest national State in history, began to expand beyond the Nile Valley, she secured her eastern flank by invading Syria and employing the Phœnicians as her navy. Then down from the Taurus regions swept the Hittites. Two centuries later the Egyptians returned, but granted an independence to the Syrian tribes which lasted about four centuries until 800 B.C.

From the east came the Assyrian and Babylonian hordes—three centuries later the Persians—until the great Alexander, in 333 B.C., conquered the land which later was established as a Selucid kingdom. In two small Syrian seaports, each called Iskanderoun, which means little Alexandria, we can trace Alexander's progress to his great city in Egypt. Then for four centuries, which included the period of Christ's life, Rome dominated the country. Bridges still stand in memory of the Romans, and on a graceful stone Roman aqueduct is built the water supply to Acre.

With the fall of the last remnant of the Roman Empire at Byzantium or Constantinople, about A.D. 600, began the long rule of the Moslem Arabs, broken only for two centuries by the establishment of the Latin kingdom of the crusaders (1100 to 1300).

Time and money could be spent in few more fascinating ways than in following the course of these adventurous invaders through the length and breadth of this land. From Antioch to Akaba, they have left their imprint in the form of magnificent strongholds of stone—the Krak des Chevaliers dominating the Tripoli-Homs gap, the fortress of Chateau Beaufort frowning over the Litani Valley and Merj Ayun and the grim rocks of the Horns of Hattim above the Sea of Galilee, where Saladin at last broke their power. This countryside is redolent of a brave but bygone spirit of adventure and religious determination.

The Mamelukes, the Circassian slave army of Egypt, ruled for two hundred years until the Ottomans came down from the north in 1500, and for four hundred years, until Allenby in 1918 drove with his tremendous energy through Palestine into northern Syria, the Turks held an unbroken sway.

Once only were they seriously threatened, when Napoleon, after his astonishing march across the Sinai, was halted before Acre. Napoleon's Hill, from which he directed the siege operations, stands barely half a mile from the ramparts of this lovely town, separated by the most northerly belt of date palms in the world.

Although Napoleon was defeated and lost his army of Egypt, the Orientals appreciated the superior training and equipment of a European army and acted accordingly. Mohammed Ali from Egypt won the race and successfully invaded Syria. The Turks put their house in order and drove him out. The Druse, the warrior people of the south Syrian mountains, rose in revolt in 1860 and attacked the Lebanese, who appealed to Europe for help. France alone responded with an expeditionary force, and Lebanon was granted independence under a Christian governor.

In the allotment of mandates following the war of 1914-1918, France gained the control of Lebanon with an administrative capital at Beyrouth. The Arabs under Feisal ruled from Damascus. Armed conflict followed. Feisal was forced to leave the country, and the Jebel Druse again revolted. From this cauldron arose a limited French mandate over certain recognized independent Syrian areas.

The French did little if anything to develop the country and were generally unpopular; with the replacement of Weygand by Denz this unpopularity increased. Into Lebanon were introduced Armenian settlers. This resulted in considerable local resentment at the intrusion of these people. Outside Tyre can be seen one of these slum Armenian villages.

The Campaign.

After the fall of France, the allies watched Vichy French developing the defences of the country, although the Tripoli pipe line had been disconnected from the oil fields; but when the Nazi airmen on their way to Irak were accommodated by the French the situation became intolerable, and it was decided to capture the country, forestalling complete Axis control.

With regard to all the campaigns in the Middle East great publicity has been given to the Australian troops, sometimes to the exclusion of others who far outnumbered the Australian Imperial Force during operations. The success of the Syrian invasion resulted from the convergent advance of three forces—an Australian division from the south towards Beyrouth, a British, Australian and French force from the south-east towards Damascus, and a British force from the west on Palmyra and Aleppo. (See Figure I.) The Australian division selected for this operation was stationed in the desert at Mersa Matruh with an occasional spectacular but ineffective air raid to break the monotony. To anyone coming down over the low escarpment in the clear of the still morning sunshine, the anchorage or Mersa of Matruh is of impressive beauty, with the dull primrose mosque against the deep blue of the lagoon and the shimmering white sand dunes beyond. But the town itself or its remains are grim; square white or dirty grey low buildings, bespattered and broken, twisted and torn by air raids, the stone Egyptian barracks to the west alone retaining some resemblance of solidity—little remains intact in this town, once the thriving centre of the trade inland to Siewa. Cleopatra is said to have first met Anthony here, and along the road to Alexandria still stand the stone hexagon watch towers to pass on the tidings of his approach. Across the western lagoon on the sea front is a hollow rock, pierced on either side for the sea to flow into a bath hewn from the stone. Whether or not it was Cleopatra's bath, it is a most lovely spot.

But with a blast from the desert all this is lost. A hot, tearing wind sweeps over everything. Barrie said that nothing has so much fun as a fallen leaf; but flying sand has its fun and games—the coarse, crude fun of the khamsin. There is a constant tightness in the chest; eyes and mouth and nose must be shielded, and yet the grit grinds in your teeth; talking and smiling crack your face; everyone's hair and eyebrows are yellow. Eating is unpleasant; bread and butter or jam are impossible. Between sips the tea must be covered, and you dare not stir the sediment of sand.

The visibility does not exceed twenty yards. One may well be lost for some hours in a journey of a few hundred yards. Riders are literally blown from motor cycles by the blast. All ordinary sounds cease, drowned by the whine of the wind, and by the clatter and banging of empty petrol tins and pieces of iron and timber as they are hurled along unseen. Trenches and depressions fade as they fill. Roads sink from sight under the drift. Where sand was heaped, a lowered mound of gravel appears; this in turn is whirled away, and stones and rocks are bared. The myriad pricks of needles blend into the stinging smart of blasting, burning sand, as the temperature rises to 120° F. or higher.

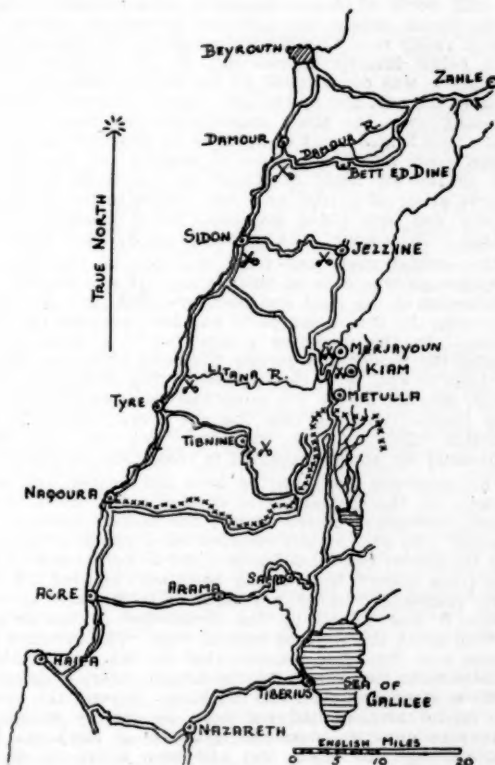


FIGURE II.
Sketch map of Syria.

In dugouts a constant curtain of sand streams down from the doorway. Sand bags begin to weep; every little crack and crevice has its trickle. Bugs and fleas are almost forgotten. Lamps are seen as through a haze of yellow fog. Books and papers disappear; tin hats on the ground, until they disappear, are like huge mushrooms. Then towards evening, when you wonder how long you can "stick" it, there is a sudden, blinding gush of dust, and the wind is cold.

A modern division, complete with transport adequately spaced, moving along one road occupies a convoy many scores of miles long.

Passing back across the desert to the outskirts of Alexandria, down through Cairo on to the canal at Ishmallia, winding across the dreary waste and waves of Sinai to Gaza and on again to the north of Palestine, the Australian division known as "Exporter Force" concentrated in the old Roman olive groves between Acre and Safad with divisional headquarters in a monastery at Nazareth overlooking Armageddon, the fertile plain of Megiddo. Intelligence as to the morale of the French was vague; in reality the resistance was bitter. In the interests of security, all reconnaissance in the border area had to be carried out in British uniforms. As a result of these various activities and their own intelligence efforts, the French staff had no doubt as to their opponents nor as to the direction of the impending attack.

It was arranged that certain of the invading troops should be preceded by interpreters who, by means of loud speakers, would summon the French to lay down their arms and join with our effort. The loud speakers were among the first casualties. Two routes led into Syria from the south.

The coastal road crosses the border at Naqura high on the cliff north of Acre; the other road crosses it thirty miles inland across the Lebanon mountains, where the Jordan valley road skirting the malarious swamps of Lake Hula below Metulla crosses into the deep Litani gorge. This route was commanded by the forts of Merjaoun and Kiam to the east and by the old crusader Chateau Beaufort frowning over the steep oleander-covered slopes to the west. One brigade was to advance on Beyrouth along the coastal road, another to cross at Metulla and push north-east to the air fields of Rayaqa on the Beka plain. A reserve group of British and Australians including horsed cavalry was held about divisional battle headquarters at Arama. "Zero hour" was midnight on Sunday, June 7.

The coastal route cut from the side of the cliffs at Iskandaroun was easy of obstruction. It was known that destruction of the road had been prepared, and the house sheltering the demolition party had been selected for early action. In the darkness before "zero" a small patrol crossed the border and quietly advanced along the side of the hills to deal with this problem. The French were all killed, but not before the mine had been sprung and the road blown, tumbling into the sea below. Only by the splendid effort of the engineers was the gap filled sufficiently for motor transport to cross later in the day.

This probable delay having been anticipated, the main advance on the coastal sector crossed a few miles inland where, two hours before "zero", the sappers had cut the frontier wire and rapidly constructed a two-mile track, so that the border coastal defences could be outflanked. Along this track moved the leading battalion, fighting its way fairly comfortably through Tibnine on to the coast at Tyre, where it was joined by the remainder of the brigade moving along the restored coastal road. The invasion had begun, and the force concentrated for its first obstinate resistance at the mouth of the Litani river, a defensive position strongly held from the hills. Beyond the ranges the inland brigade had not been so rapidly successful. For three days the dominant position of Merjaoun held out, although the Kiam fort had been blown up on the second day. A barrage of two field regiments was concentrated on the position for three hours on the third night, and at dawn the French were driven out. The official handing over of the old town by the authorities was sadly marred by a burst of air activity from the French.

On the coast the brigade was pinned for three days in the malarious swamps of the Litani. A commando force landed from the navy swung on to the wrong side of the river right into a French position, and suffered heavily. But again, by an out-flanking sweep and magnificent fighting, one battalion crossed the river to the west, out-maneuvring and out-fighting the defences. The way to Sidon lay open. Strewn along the route—the way of the French—lay the wreck and ruin of the retreating forces,

abandoned papers scattered and blown over the ground, clothing (including the streaming blue and red sashes of the legionaries), rotting food, dead men and animals and burnt-out vehicles.

To support more directly this coastal advance on Sidon a change of plan was made. Instead of pushing up the narrow defile leading towards Zahle, the inland brigade, leaving a covering force from the reserves to screen the right flank, moved north by night in a direction parallel with the coastal road along a second-class goat track leading to Zezzine, high in the mountains overlooking Sidon.

The "going" was dreadful. To pass over by daylight was an adventure; to move motor transport and guns successfully by night was a triumph. But it was achieved, and Zezzine was occupied, to the complete surprise of the French, who had considered themselves unapproachable from the south. The brigade was established on a commanding position in the pine forests above the magnificent gorge or Beit er Din, as the battle of Sidon was fought on the coast twenty-five miles to the east. Into this battle the French threw their tanks and their air support. We had no tanks except those captured and repaired at the Litani, and at that time our air force was not supreme. Our navy fought on our left flank and in turn was subjected to air attacks, and on one occasion to a sortie by the French warships, which were engaged by a field regiment. The town of Sidon was not to be shelled, but permission was granted to open fire on an old crusader tower, an obvious observation post.

During this battle one of our dressing stations, plainly marked by a red cross, was situated within a few hundred yards of a field battery, hidden in a banana grove; French planes, attempting to bomb and "strafe" the guns, swooped over this ambulance post at a height of a few hundred feet, waved and held their fire as they passed over, and opened up again on some transport just over the hill.

Again success was gained by an outflanking manoeuvre around and down from the hills, and Sidon was won.

Then came the disaster of Merjaoun, the nature of which was clear only after discussion with the French staff following the armistice. The French on our right flank, patrolling through our not very active covering force, found Merjaoun almost unoccupied. Fearing a trap, their armoured cars pushed cautiously on through the town and then stopped, calling for support. The presence of these few patrolling cars with desultory covering gunfire was mistaken for a powerful tank attack, and our troops retired down the slopes. The French reserves—legionaries—refused to march into the town, as they were weary, and all through that night Merjaoun was there for the taking by either side. With daylight the French consolidated their position, and we were back in the valley, having lost some prisoners, and with our communication with the forward brigade at Zezzine in grave danger from an additional French threat to the south at Deraa. To hold this threat, one battalion was rushed back from Zezzine and a battalion was hurried from the coast to replace it; until this menace at Merjaoun was mastered, activities to the north of Sidon and Zezzine were limited to active patrolling. Three days later Merjaoun was cleared for the second time, and the French were driven back to Hasbaya and beyond.

To the east the fall of Damascus threw the French flank into danger, and the threat was increased by a force moving from Irak towards Palmyra. By night, two Australian battalions and some British guns from the Damascus sector were moved on to the coast, where preparations were being made for the assault on the strong Damour position, while the Zezzine force again pushed northwards towards Beit er Din. The approach to Zezzine was either from Sidon on the coast or from Merjaoun in the south. The final mile of both these routes lay fully exposed to and within range of the French guns, which took "pot shots" at any movement. Little damage was ever done, but the final dash by daylight into the town down this mad mile was often a thrill.

The town of Damour lies about ten miles south of Beyrouth, and it presented a nice problem. South of the defence the river enters the sea through a defile widening into a swamp on the beach. The coastal road winds down the hills and passes north across a fine stone bridge a quarter of a mile inland; but the French demolish their bridges efficiently by blowing the whole central span. From dense banana groves along the sea the stony foothills rise steeply through the villages of El Attika and Baum, protecting the left flank. The front is guarded by the river, and by the rugged, precipitous approaches from the south. Along these slopes on the French side were well-prepared defences—wire, mines, machine-gun posts and field guns; leading into the French position was the road from Beit er Din in the hills, also strongly held by the French. These positions were mutually supporting. The first action was to block this communication and isolate Damour, and despite many French attacks from the west the block was maintained. Day after day our navy shelled the defences—two batteries of British medium howitzers joined with our field guns and pounded the area.

During this phase was witnessed one of those incongruities of war that linger in the memory. The French guns were searching for ours, and shells were falling around an advanced dressing station. The men were sheltering against the stone terraces, when over the ground wandered a little Wog girl, six or seven years old and quite unperturbed, carrying an old sack into which she was dropping any empty bottles lying about.

The surrounding hills were terribly rough; supplies could be maintained only by mules and manpower, moving sometimes three miles in five hours. Again success came with an outflanking sweep. Covering the more flat frontal ground about the river mouth, the main force clambered inland over the hills—some down the rough steep into the river guarding El Attika, and others further afield through El Baum and Abey. The French flank, considered unapproachable, was turned and beaten.

Looking at this defensive position from the French side, one could ask for nothing better as holding ground. During the attack on El Attika a French legionary was captured while attending to some of our wounded; he was the only survivor of a small party which had been wiped out in the confused fighting. This man was a doctor serving as a private in the Foreign Legion, and for two days and nights he worked for us, helping with a rush of casualties in a forward aid post.

In the taking of this position a Victoria Cross was worthily won. A gunner forward observation officer, crawling forward with his telephones to some rocks just in front of the machine posts, directed the gun fire down on these targets within a few feet of him, until he himself was shot through the leg. It was impossible for bearers to reach him over that exposed ground in daylight, but when the stretchers did arrive he could not be found. He had crawled away in the gloom, fallen over a small cliff and lain helpless all through the night in a banana grove below. The only approach was down a track and over the river in sight of the French, and no movement had been allowed along this route, but with daylight a small squad displaying a red cross on a pole moved down, found the man and carried him out. As the squad moved back along the road to a shelter half a mile away the French guns opened and followed a few hundred yards behind them, but leaving them in safety; only when the casualty was back in shelter was the whole area "plastered" again. During the previous battle of Merjaoun this gallant officer had climbed onto the flat roof of a house in the town, and, disregarding his own safety, had directed the guns on to some tanks sheltering against the walls below him. These men cannot "get away with it" forever, and at Damour the loss of his leg ended his field career.

With the crumbling of this flank and the advance of more and more of our troops down from the hills, the French position became untenable. For some days bitter, fierce, hand-to-hand fighting continued on through the banana groves by the sea; but the French were beaten and

the remnant withdrew towards Beyrouth. A truce was sought and granted.

A few days later, at the Sydney Smith Barracks of Acre, as the term "armistice" was unacceptable among allies, a "convention" was signed by General Sir Henry Maitland Wilson and General Verdillac. Under the terms of the convention the French were given the alternatives of joining the Fighting French Forces or of being repatriated to France. Pending their decision the French were concentrated in groups at Beyrouth, Junee, Tripoli, Lattakia and Aleppo, with our force conveniently camped around them.

Social calls were made between the staffs, and over a glass of wine the various phases of the campaign were discreetly discussed from both points of view. It soon became apparent that the intelligence of both sides had been sadly astray in the fog of war. One instance was interesting. At the beginning of the operation the Australian division was known in signals and orders as "Exporter Div". This was soon picked up by the French, and when after a few weeks the force reverted to its original numerical designation, this also soon became known to the enemy, who were convinced that two divisions were in this field of operations, the new division having taken over from "Exporter Div", which they expected to come in on their left flank.

One of the generals who opposed us at Zezzine asked our general officer commanding: "How many tanks did you actually have against me? I sent my patrols out each night, but I could never be sure if you had fifteen or twenty." "Oh, we had enough!" answered our general. In reality we had only one—an unserviceable captured French tank. Quite unable to move under its own power, it had been dragged off the road and sited as a fixed defence in a wood. The French in front of Beit er Din also had a mad mile which we used to "shoot up", and this general told us how he had spent an inconvenient half-hour under a stone bridge during a heavy period. The position at Merjaoun was made clear at these discussions. It is always as well to remember that, however unpleasant anything may be, the enemy is probably sharing it to at least a similar degree.

The attitude of these Vichy French to Britain and Germany was very interesting, and there was a firm conviction about Dunkirk and the early phase of the war. If there had been an Australian or a British foreign legion, probably many of the officers and white troops would have come over; but with the exception of a few coloured men they practically all refused to join the Fighting French and elected to return to France.

It was agreed in the convention that our prisoners who had been flown to western Europe should immediately be returned; but it was discovered that the last few plane loads had actually left Syria after the truce, and the delay in their return led to the arrest of General Denz at his headquarters in Tripoli. The final embarkation of the French staff at Beyrouth was carried out with all worthy dignity.

Thus ended an unhappy but completely successful campaign. Our cost in casualties was greater than in the desert up to that time, and with the exclusion of prisoners, greater than in Greece and Crete. But Syria was and has remained secure, and the easy gate to the Caucasus and Iran by that route is firmly closed to the Axis. Following the departure of the French, the Australian Force for a period assumed garrison duty in some of the loveliest country in the world, along the Turkish border, across the Euphrates and among the mountains of Syria. Towards Christmas the snow came, covering the hills and clothing the valleys and the villages with a cold, dense mantle of white. At Tripoli for the first time in more than twenty years the waves lapped softly against the snow covering the beaches.

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INTRAVENOUS ANÆSTHESIA.

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Melbourne.*

THE use of intravenous anaesthesia must be regarded as the latest and perhaps one of the most important advances in the art of anaesthesia. In the treatment of the wounded in the Middle East its value as a quick, reliable and safe form of anaesthesia was amply demonstrated, and in civil practice, because of the advantages it possesses and its particular value for certain types of cases, this form of anaesthesia is coming more and more into use. With these points of view in mind it is the purpose of this paper to record the methods used and the experience gained in the intravenous induction of anaesthesia in 700 cases.

Intravenous anaesthesia is not new. In 1872 a Frenchman obtained anaesthesia by administering intravenously a watery solution of chloral hydrate. Some time later, ether, varying in strength from a 3% to a 5% solution in water, was used in the same way. But intravenous anaesthesia was soon discarded as a method of anaesthesia, and it was forgotten until a few years ago, when with the introduction of certain of the rapidly acting barbiturates ("Evipal Soluble" and "Pentothal Sodium") its possibilities again became recognized. Then, since the use of these barbiturates improved the methods and revealed the potentialities of intravenous anaesthesia, forms of intravenous anaesthesia induced by the very slow injection of weak solutions of certain alkaloids came somewhat into vogue. The anaesthesia brought about by these drugs is usually of short duration and in some cases of no great degree of depth; it is actually an intravenous narcosis.

On the Continent, a solution containing scopolamine-hydrobromide (0.0005%), "Eukodal" (0.01%) and "Ephetonin" (0.025%) is being used. When slowly injected intravenously, this produces in two or three minutes an anaesthesia of from twenty to thirty minutes' duration, which is long enough for operation on most war injuries of the limbs.

In England, James⁽¹⁾ has been using "Omnopon" or morphine intravenously. He gives these alkaloids slowly and with great caution to induce an intravenous narcosis. This form of intravenous anaesthesia is used to provide a good supplementary basic narcosis to supplement inhalational or spinal anaesthesia.

THE BARBITURATES.

There are now in clinical use three types of barbiturates. These are classified according of the degree of anaesthesia they produce—namely, prolonged, sustained and short. "Sodium Amytal" is a barbiturate of the first type, and "Pentobarbital Sodium" or "Nembutal" is one of the second type. Barbiturates of the third type are "Evipal Soluble" and "Pentothal Sodium". "Evipal Soluble" is sodium methylcyclohexemyl methyl methylurea. It was introduced in Europe as "Evipan". "Pentothal Sodium" is sodium ethyl 1-methylbutyl thiobarbituric acid. It was formerly called "Barbiturate A Thonembutal". The potency of "Pentothal Sodium" is greater than that of "Evipal Soluble", and for this reason it is preferable to "Evipal Soluble" for intravenous use. The relative margin of safety of these two drugs is about the same if the intermittent method of administration is employed, and the difference in potency is taken care of by variation in the dosage. In the majority of cases here reported, "Pentothal Sodium" was used, in a small number "Evipan" was used, and in the later cases of the series "Cyclonal Sodium" was used.

"Pentothal Sodium" was first used by the writer in 1935 as a "single dose method". The results were found to be too irregular and variable to warrant the use of this method of intravenous anaesthesia in the more or less routine cases. The 10% solution, which was recommended, produced profound respiratory depression, and

with the withdrawal of the anaesthetic agent the patient quickly returned to consciousness, so that only a short period of anaesthesia was produced. This method had the added disadvantage that it caused a local reaction and in some cases ulceration, if by any chance some of the agent was injected outside the vein. With the improvement in the manufacture of "Pentothal", it was discovered that weaker solutions were just as effective as the stronger solutions and that a 2.5% to 5% solution produced a more satisfactory anaesthesia; there was the advantage that its administration could be converted into a more or less continuous method. With these percentages the anaesthesia could be quickly induced; its duration depended mainly on the skill of the anaesthetist; and in nearly all cases, the patient woke without nausea, vomiting or restlessness.

METHOD OF ADMINISTRATION.

Three distinct methods of administration—the single dose, the repeated dose and the continuous method—have been employed. These depend on the length of anaesthesia required, on the type of operation, and on the condition of the patient. In the methods here described will be included the use of intravenous anaesthesia when it is employed (a) as the sole form of anaesthesia, (b) as a preliminary to inhalational anaesthesia, and (c) as a supplement to spinal or local anaesthesia.

Preparation of Patient.

All patients for intravenous anaesthesia are prepared as they would be for general anaesthesia. The preliminary examination should include that of the heart and blood pressure and the selection of veins which would be suitable for the injection of the anaesthetic agent.

Intravenous anaesthesia is contraindicated for the following subjects: (i) children who are less than ten years of age, because all the rapidly acting barbiturates used intravenously are respiratory depressants; (ii) patients with severe dyspnoea from pulmonary or cardiac disease.

Premedication.

Special attention must be paid to premedication when intravenous anaesthesia alone is to be used. The type and temperament of the patient will come into consideration, as well as the duration of the anaesthesia and the amount of relaxation required by the surgeon. As a rule a capsule of "Seconal" (1.5 grains) is given the night before operation, and the dose is repeated in the morning one and a half hours before the patient goes to the operating theatre. This is followed one hour later by the injection of morphine (one-sixth of a grain) with atropine (one one-hundred and twentieth of a grain) or hyoscine (one two-hundredth of a grain). In some cases, instead of "Seconal" "Nembutal" (1.5 grains) is given. In this case the anaesthesia is deeper, the amount of intravenous anaesthetic agent used is somewhat less, and the waking period is slightly prolonged. Variations in the method of premedication have been practised by the writer. For strong, robust males, or when the history suggests the possibility of a period of excitement (a history of alcoholism) or tells of difficulties in previous anaesthesia, the dose of "Nembutal" is increased to three grains and that of morphine to a quarter of a grain. Moreover, for weak, debilitated patients, when anaesthesia of short duration and little relaxation is required, "Nembutal" and "Seconal" have been omitted.

Administration.

The skin of the arm selected for injection is prepared as for a surgical operation. Usually the arm selected is that opposite to the side on which the surgeon is working.

The method of administration here described is that used for "Pentothal Sodium". This drug is a lemon yellow powder readily soluble in water. When mixed with it, it effervesces, giving off a gas resembling sulphuretted hydrogen. It is made up in ampoules of 0.5 and 1.0 grammes and is used in solutions of 2.5% to 5% strength.

A quantity of "Pentothal Sodium" made to the proper strength is mixed before operation. The syringes are then

loaded with it, so that they can be picked up at once when the vein is punctured. When any other than the continuous method is used, only a solution specially prepared and of a certain strength can be employed.

The arm selected is placed in a suitable and fixed position. Its upper part is encircled with the armlet of a baumanometer, and this is left in position until the operation is over.

The venous puncture is an important part of the procedure. The vein is punctured with a wide bore needle, as shown in Figure 1. The solution is then injected at a rate not exceeding 1.0 cubic centimetre in fifteen seconds. The patient is asked to count aloud, and the variations in the length of this period to the loss of consciousness are particularly noted. After 2.0 cubic centimetres have been injected, it is well to wait and notice the reaction of the patient. Some patients, at this stage, will have lost consciousness, while others will be alert. It is the reaction of the patient to these first 2.0 cubic centimetres of the drug that determines the subsequent rate of injection of the "Pentothal Sodium".

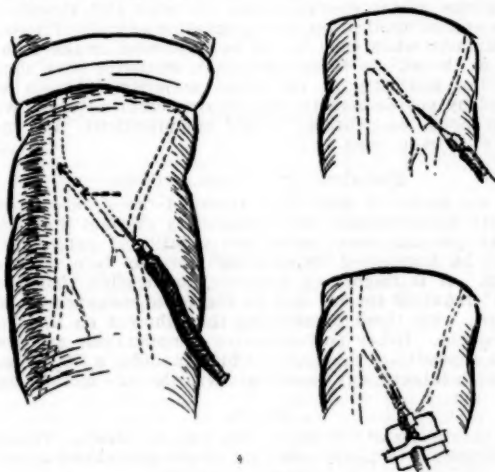


FIGURE 1.

(After Crile.⁽²⁾) Introduction of the needle. The point of the needle is inserted through the skin with the bevel upwards, parallel and lateral to the vein, so that the impetus of the needle, after it has traversed the skin, does not carry it on through the walls of the vein. The needle is then introduced into the vein at an oblique angle. Blood escapes from the vein into the needle, the baumanometer armlet is slowly released and the anæsthetic agent is allowed to flow.

Induction is not always as rapid as is often reported. The majority of patients lapse into unconsciousness with nothing more than a slight flutter of the eyelids, or with an occasional sigh and a deep yawn. A minority are troublesome, and cough, sneeze, and at times "gag". Here the temptation is to increase the rate of injection; but it is the experience of the writer that this temporarily increases rather than alleviates the difficulty, and further, that it causes a period of respiratory depression which interferes with the smooth course of the anæsthesia. As soon as the stage of muscular relaxation is reached, a metal airway is introduced and oxygen is run in slowly through a nasal catheter. The subsequent rate of injection and amount of anæsthetic agent used are now determined by the behaviour of the patient and by the ordinary signs which are used as a guide to the depth of anæsthesia—namely, the increase in depth of respiratory phase, the pupillary reactions, and the diminution or increase of muscular relaxation. If dyspnoea should appear in the course of the operation, the anæsthesia must be immediately discontinued.

Repeated Dose Method.—The repeated dose method is the technique usually employed; the needle is kept in the vein, and the drug is injected as required. It is possible

to carry on the anæsthesia from one hour to two hours as required; but in this case the precaution must be taken occasionally to withdraw blood into the syringe in order to ensure that the needle is still patent and that it is still within the lumen of the vein. With this method, and with the care and precautions mentioned, respiratory depression and fall in blood pressure are minimized.

Single Dose Method.—The single dose method has been infrequently employed by the writer. The reason is that to administer a single dose until surgical anæsthesia is produced seems as absurd as attempting to give ether by the "open drop" method in a sufficient amount in the first few minutes to supply anæsthesia for the whole operation. It induces an anæsthesia of short duration with extremely deep narcosis, and produces low blood pressure and depressed respiration.

Continuous Method.—The continuous method is selected in the following circumstances: (i) in cases in which difficulties are likely to be encountered during prolonged anæsthesia; (ii) for debilitated patients, when it is desirable to cut down to a minimum the quantity of anæsthetic agent used, and so that, in the event of collapse, "Coramine" or other drugs (or even a blood transfusion) can be conveniently and speedily given through the same needle. The technique is to expose a vein and tie in a cannula, which is connected to a "Soluvac" bottle containing glucose saline solution, the flow of which is regulated by a thumb screw. The glucose saline solution "drip" is turned on and its rate of flow is adjusted. Into the tubing near to the cannula is injected, with a syringe, "Pentothal" solution, with the same precautions as in the repeated dose method already described.

Comments.—Towards the conclusion of the operation, in both methods of intravenous anæsthesia, the depth of anæsthesia is closely watched, just as it is in the case of inhalational anæsthesia. Before the patient leaves the operating theatre the reflexes should be returning. If they are slow in doing so, "Carbogen" should be administered. In this respect an injection of "Coramine" (one cubic centimetre) or of "Cardiazol" (one cubic centimetre) will also help. As a rule, the post-operative course is uneventful and quiet. Vomiting is rare. The patient may be wakeful for a time, but usually, after a short period during which the reflexes are returning, he passes into a normal, peaceful sleep. So far the anæsthesia provided by the intravenous method has been ample for the performance of the average type of operation. In the series here reported there was no operation of longer duration than the maximum dose of the anæsthetic agent would permit. The largest quantity of "Pentothal Sodium" used in any one case of the series was two grammes.

COMPLICATIONS.

Some complications in the period of recovery were noted. In one operation of short duration, which was performed urgently and without premedication, prolonged anæsthetic attacks occurred. In a few cases vomiting occurred. A female patient, who gave a history of prolonged vomiting after ether anæsthesia on two previous occasions, vomited after intravenous anæsthesia on the first occasion, but curiously enough she did not vomit after intravenous anæsthesia on a second occasion. After an eye operation, a male patient had a severe laryngeal obstruction, which was relieved only with difficulty, and for which no explanation could be found.

INDICATIONS FOR THE USE OF INTRAVENOUS ANÆSTHESIA.

As stated earlier, the field and scope of intravenous anæsthesia are wide; for with the introduction of "Pentothal Sodium" the margin of safety has been considerably increased, and in very few cases, other than those already outlined, is its use definitely contraindicated.

As a Preliminary to Ether Anæsthesia.

Used as a preliminary to inhalational anæsthesia, intravenous anæsthesia abolishes all knowledge of the operation. A few cubic centimetres intravenously administered before

the patient goes to the operating theatre usually elicit a statement from the patients afterwards that they remembered nothing after the "prick of the needle"; and yet, when the administration of ether was commenced, they appeared wakeful.

When one is switching over from this preliminary intravenous anaesthesia to ether, a little skill is required. On account of the depression of the respiratory phase, sometimes on account of coughing and spasm, a stormy few minutes will be encountered. But these difficulties can be overcome if carbon dioxide or even oxygen is run in steadily under the mask—or, better still, if nitrous oxide and oxygen are used as a vehicle for the ether.

As a preliminary to ether anaesthesia, "Pentothal" given intravenously has the advantage that it minimizes the quantity of ether employed both in the induction and in the maintenance of the anaesthesia, and thus cuts down the incidence of post-anaesthetic vomiting.

As a Supplement to Spinal Anaesthesia.

When intravenous anaesthesia is employed as a supplement to spinal anaesthesia, great care must be exercised in its use. Most spinal anaesthesia subjects have received premedication with morphine and hyoscine, which depress the respiratory centre, and with the introduction of the anaesthetic agent into the spinal canal there is usually a fall in blood pressure. If to these effects, which are coincident with the usual method of spinal anaesthesia, we add those of intravenous anaesthesia, which also depresses the respiration and lowers the blood pressure, it would seem like courting trouble. As a matter of actual practice, however, if the intravenous anaesthetic agent is given even more slowly than has been previously recommended, and with plenty of oxygen, no ill effects are ever noted.

In cases in which spinal anaesthesia has failed completely, it is not wise to use intravenous anaesthesia. But in borderline cases, in which the induction of the spinal anaesthesia has taken a longer time than usual, and in which the extreme nervousness of the patient makes it undesirable to proceed with this form of anaesthesia alone, the addition of intravenous anaesthesia is recommended. At the end of a long operation, too, when the spinal anaesthesia is commencing to "wear off", intravenous anaesthesia is to be preferred to ether or nitrous oxide for supplementing the spinal anaesthesia. In such cases, the intravenous use of morphine and "Omnopon", as already described, will provide a supplementary general narcosis that will permit satisfactory completion of the operation. Here, just as in the case of "Pentothal Sodium", care should be taken in regard to the preliminary hypodermic injection of morphine, which has been given before the patient's arrival in the operating theatre, and allowance should be made for a continued effect of this injection after the completion of the intravenous injection.

By the intravenous use of these alkaloids, it is possible to produce a light state of narcosis, when the patient is completely apathetic to his surroundings. Such a state reduces psychic trauma to a minimum, and also produces a lethargic state in which the patient rarely becomes restless and never uncontrollable. The intravenous injection is given slowly, so that the patient does not receive more than one-third of a grain of "Omnopon" or one-sixth of a grain of morphine every three minutes. The injection is continued until the patient fails to respond promptly to questioning and lies in a somnolent state. The pupils become pin-point in size, but the respiratory rate should not be depressed below twelve to the minute.

According to one author, examples of dosage for "good surgical risk" patients are as follows:

Young adult, male: "Omnopon", one and two-thirds of a grain; morphine, three-quarters of a grain.

Young adult, female: "Omnopon", one and one-third of a grain; morphine, half a grain.

Middle-aged male: "Omnopon", one grain; morphine, three-eighths of a grain.

Middle-aged female: "Omnopon", two-thirds of a grain; morphine, one-quarter of a grain.

This form of intravenous narcosis is contraindicated for patients over sixty years of age, because even a small dose produces mental confusion and impairs their chances of ultimate recovery.

Other Indications.

In addition to special indications for its use—for example, as preliminary and supplementary anaesthesia—intravenous anaesthesia has a wider sphere of use. Indeed, it is more difficult to decide which cases are unsuitable for intravenous anaesthesia, rather than to enumerate the indications for its use. In the initial stages of its development, when its effect was transient, it was of special use to the surgeon, because of its short duration and because with it there was no danger of explosion like ether; it could be used when diathermy or the cautery was employed. Now, in the present stage of its development, it can be safely said it has taken the place of intratracheal anaesthesia for most operations in the head and neck, in which the anaesthetist must necessarily be far removed from the field of operation. Rarely now is it necessary to subject a patient to long, deep, ether anaesthesia for eye operations or for operations on the nose and throat. It has a special application in implantation of radium needles, particularly when they are to be implanted in the mouth, nose or throat. In these operations, statistics have shown that the mortality in the great majority of cases was caused by post-anaesthetic pulmonary complications. With intravenous anaesthesia, these complications are now rarely if ever, seen.

POST-OPERATIVE COMPLICATIONS.

In the series of cases here recorded there were no pulmonary complications, notwithstanding the fact that many of the patients were feeble and debilitated subjects and would be considered "poor risks" for any form of anaesthesia. It is important, however, to mention that "poor risks" required special care in regard to management and dosage; with these precautions they showed no ill effects or sequelae. Other post-operative complications are given in an appendix to this paper, which includes a list of cases in which intravenous anaesthesia was the sole method used.

Deaths.

In this series of 700 cases there was one death. This can be attributed to faulty selection of the anaesthetic agent.

The patient was a "poor risk". The operation was a lobectomy. He received premedication with "Nembutal", morphine (one-sixth of a grain) and atropine (one one-hundred-and-twentieth of a grain). It was intended to induce anaesthesia with "Pentothal Sodium" and carry on with nitrous oxide and oxygen. After the injection of five cubic centimetres of a 2.5% solution of "Pentothal Sodium", his respirations gradually became more and more depressed until they finally ceased. An intratracheal catheter was introduced and artificial respiration was carried out, but no restorative treatment was of any avail, and he died. The autopsy finding was illuminating. Although the patient showed no signs of dyspnoea or respiratory distress before the operation, the autopsy disclosed that a huge mediastinal mass had obviously caused obstruction.

Since then subjects with pulmonary lesions have always been carefully investigated from this point of view.

This was the only case in the series in which intravenous anaesthesia was used for lobectomy. For many other kinds of chest operations, such as thoracoplasty and phrenicotomy, it has been used successfully as the sole form of anaesthesia. Experience in the cases reported shows that it can be used with safety in acute or chronic pulmonary disease, in which ether is contraindicated; and that in these cases it is rapidly becoming the anaesthesia of choice.

LIMITATIONS IN THE USE OF INTRAVENOUS ANAESTHESIA.

It has been stressed that no barbiturate containing a sulphur atom in its molecule, such as "Pentothal", should be employed within forty-eight hours before or after treatment with sulphanilamide preparations. The writer has, however, recently had the experience of giving "Pentothal" to an elderly male patient who had for two years prior to operation taken "M & B 693" tablets daily.

TABLE I.

Operation.	Number of Cases.	Duration of Anaesthesia.	Dosage.	Recovery.	Complications.
Eye (removal)	35	$\frac{1}{2}$ to $\frac{1}{4}$ hour.	7-10 c.cms., 5% solution.	At the conclusion of dressing.	Nil.
Retinal detachment	10	1 to $\frac{1}{4}$ hours.	20 c.cms., 2.5% solution.	$\frac{1}{2}$ hour.	Nil.
Iridectomy (glaucoma)	28	$\frac{1}{2}$ hour.	10 c.cms., 5% solution.	Immediate.	Laryngeal spasm.
Cataract: Plastic operation to lids	3	1 hour.	15-20 c.cms., 2.5% solution.	$\frac{1}{2}$ hour.	Nil.
Implantation of radium needles:					
1. Tongue	50	$\frac{1}{2}$ to $\frac{1}{4}$ hours.	5-30 c.cms., 2.5% solution.	Immediate, at conclusion of operation; in short procedures up to $\frac{1}{2}$ hour.	Nil.
2. Tonsils	20				
3. Glands of neck	70				
4. Breast	35				
5. Axillary glands	18				
1. Removal of one-third of tongue	4	1 to 2 hours.	5-30 c.cms., 5% solution.		
2. Removal of submaxillary, submental glands	10				
3. Radical antrostomy	4				
4. Radical mastoidectomy	8				
Operation on chest:					
1. Thoracoplasty	7	1 hour.	10 c.cms., 5% solution. 10 c.cms., 2.5% solution.	$\frac{1}{2}$ hours.	Nil.
2. Phrenic evulsion	10	$\frac{1}{2}$ hours.	10 c.cms., 5% solution. 30 c.cms., 2.5% solution.	1 to 2 hours.	Nil. Death.
3. Simple mastectomy	18				
4. Radical mastectomy	5				
5. Lobectomy	1	$\frac{1}{2}$ hour.	20 c.cms., 5% solution.		
6. Secondary suture of abdominal wound	2				
Abdomen:					
1. Gall-bladder operation	2	1 hour.	40 c.cms., 5% solution.	2 to 4 hours.	
2. Appendicectomy	22	$\frac{1}{2}$ hour.	30 c.cms., 5% solution.		
3. Gilliam operation	35	1 hour.	35 c.cms., 5% solution.		
4. Herniotomy	21	1 hour.	30 c.cms., 2.5% solution.		
Pelvis:					
1. Dilatation and curettage	86	$\frac{1}{2}$ hour.	7-10 c.cms., 2.5% solution.	Immediate.	Nil.
2. Prostatic resection and suprapubic prostatectomy	55	1 to $\frac{1}{4}$ hours.	30 c.cms., 2.5% solution.		
3. Stone in bladder and partial cystectomy	2	$\frac{1}{4}$ hours.	40 c.cms., 2.5% solution.		
4. Dilatation of anal sphincter	20				

He was aged eighty-two years. He came into hospital with an acute retention of urine, with uncompensated auricular fibrillation, and with oedema of the ankles. The premedication given was morphine sulphate, one-sixth of a grain. One cubic centimetre of "Pentothal Sodium" solution was injected, to the stage when he was just asleep, and the anaesthesia was maintained at the lightest possible level compatible with the operating ease of the surgeon. Oxygen was given freely through a nasal catheter. The patient's bladder was opened and a suprapubic tube was inserted. The whole procedure occupied twenty minutes. Five cubic centimetres of a 2.5% solution of "Pentothal" were the total quantity of anæsthetic agent employed. The patient was awake and talking before he left the operating theatre. Notwithstanding the fact that he had been taking quantities of sulphanilamide, no after effects were noted, and the next day he continued his "M & B 693" tablets.

This case was most instructive from every point of view. The patient was a "bad risk", who would previously have been given nitrous oxide and oxygen. With this he would have been difficult to anaesthetize satisfactorily without some cyanosis, and as a result of the inhalational anaesthesia, his post-anæsthetic course would have been stormy.

Another instructive case was that of a man, aged fifty-four years, with a history of coronary sclerosis five years prior to operation. This man came into hospital for an abdomino-perineal resection for malignant disease of the rectum. He was given nitrous oxide, oxygen and ether, and was quite well until six days later, when he was brought back to the operating theatre for a partial resection of bowel, because a loop of it had become gangrenous. He was then in a very toxic condition; he had had two blood transfusions and a continuous drip administration of glucose-saline solution was still running. Repeated doses of morphine and "Nembutal" had been given since his first operation. He presented every possible problem from the anæsthetic point of view. Although the surgeon was unable to decide how much would have to be done and how long and severe the operation might be, any other form of inhalational anaesthesia was out of the question, because of his previous cardiac history and his present toxic state. He was given

ten cubic centimetres of "Pentothal", in interrupted doses, into the saline drip apparatus, as the surgeon required. He had oxygen running through the nasal catheter, and at the conclusion of the operation he was given one cubic centimetre of "Cardiazol" into the intravenous drip apparatus. The duration of the operation was three-quarters of an hour; the anaesthesia was perfect, and his reflexes were returning as he left the operating theatre.

CONCLUSIONS.

1. "Pentothal Sodium" is the intravenous anæsthetic agent of choice, because of its flexibility; varying amounts may be employed intermittently as needed.
2. It is the anæsthetic agent of choice in operations on the head and neck, procedures which previously demanded an intratracheal catheter and deep ether anaesthesia.
3. So-called "poor anæsthetic risks" are disturbed far less by intravenous anaesthesia than by nitrous oxide and oxygen, particularly in the induction and recovery periods.
4. Intravenous anaesthesia should not be employed when good muscular relaxation is imperative, as the latter can be achieved only at the expense of grave risk to the patient.

REFERENCES.

1. N. R. James: "Regional Analgesia for Intra-abdominal Surgery", 1943.
2. Crile and F. Shively: 1943.

APPENDIX.

The cases recorded in Table I are those in which "Pentothal Sodium" was the sole anæsthetizing agent used. To avoid repetition, details are given only in certain types of case which can be taken as representing the principles followed in the others. Where it is shown that a 2.5% or 5% solution is used in one case, the explanation is that anaesthesia was induced with the 5% solution and maintained with the 2.5% solution.

Intravenous anaesthesia was used also for primary suture and cleansing of wounds after street accidents, and for the setting of fractures and the application of plaster of Paris splints.

Reviews.

A PICTURE BOOK ON FRACTURES.

"PICTORIAL HANDBOOK OF FRACTURE TREATMENT", by Compere and Banks, is a book on fractures that occupies only 351 pages.¹ In previous reviews on short books on fractures, we have pointed out that it is impossible to get all the information required into anything less than 700 pages. This book differs from the previous books, however, inasmuch as the greater part of the explanation is done with pictures. This has been extremely well done, and is undoubtedly a big step in the right direction. One great advantage of the book is that it represents the author's own practice, and thus has a freshness and vigour which are missing from books which attempt to describe all methods. Later editions will include many improvements, but it may now be said that it is one of the short books on fractures that is worth buying.

MATERIA MEDICA FOR NURSES.

THE requirements of a book on *materia medica* for nurses are first, that it should be brief, simple and true, secondly, that it should deal with all the proven and common medicaments that a nurse might be required to handle, and, thirdly, that it should have a full and satisfactory index.² Professor A. Muir Crawford's book may be said to fulfil fairly adequately the first and second of these requirements, but not the last. A nurse will probably need the book more for reference than for study, and therefore will wish to be able to turn quickly to the page bearing the information she is seeking. She will often find difficulty in doing this if she uses Professor Crawford's book; for the index is inadequate. But despite this criticism we regard the book as good of its kind and one that might safely be recommended to nurses during their training and after.

THE ESSENTIALS OF MODERN SURGERY.

"THE ESSENTIALS OF MODERN SURGERY" is typical of several well-known and excellent text-books of general surgery emanating from various medical schools in Great Britain.³ This book comes from Saint Mary's Hospital Medical School, London, and is a credit to its editors. It is, in spite of what obviously must have been difficult working conditions for the publishers, beautifully printed and is illustrated with first-class clinical pictures both coloured and black and white. The work is as a whole very readable, well arranged and well balanced. The only criticism which might be levelled at it on general grounds is that for senior students it is somewhat too compressed. However, that is such a change that it might be considered an advantage, and it could easily be rectified if the editors placed at the end of each chapter a few references to well-known standard articles to enable those students interested to follow up a particular subject further. In the first part of the volume some of the new experiences of traumatic surgery consequent upon the present war and the air attack on Britain have been included and this aspect of surgery has been brought up to date. The more general sections here are rather short and we would point out that the statement that "the only other parasite (than hydatid) that causes cysts in the human being is the *Trichina spiralis*" is quite wrong. The sections dealing with infections of the hand and diseases of

the blood vessels and of the head and neck are excellent. Under diseases of the thyroid too little emphasis is laid upon the commonest form of thyrotoxicosis, that occurring "secondarily" in nodular goitres in middle-aged people, while the statement that a colloid goitre should be prevented from becoming toxic is unsound. The chapters on otology and particularly the section dealing with disease of the larynx are excellent, while the surgery of the chest is well handled also. The chapter on disease of the breast is unnecessarily compressed and this important section of surgery deserves fuller consideration than is given. In the case of diseases of the abdominal organs due prominence is given to the more recent advances in the management of injuries and paralytic ileus and in the main the surgery of this region is adequately dealt with. The surgery of the skull and brain, of nerve injury and of fractures and deformities is dealt with in the final chapters, and includes the more modern conceptions of treatment and maintains the general excellence of the work. Altogether, with the exception of the few minor criticisms submitted, the book, when one considers its object, leaves little to be desired, and the editors and publishers are to be congratulated upon its publication at this time. It can be confidently recommended to those who desire a recent account of general surgery as practised at a great English clinical school.

THE ADELAIDE CHILDREN'S HOSPITAL PHARMACOPŒIA.

THE "Adelaide Children's Hospital Pharmacopœia" is an excellent brochure of the "pocket companion" type.¹ The first half is devoted to a formulary and pharmaceutical supplement, while the remainder bears much condensed information on a variety of topics of pediatric interest.

The formulary caters for a wide range of requirements, and with many different prescriptions subserving the same therapeutic end, allows the exercise of some individualism in hospital prescribing practice. Perhaps the retention of this wider selection at a time when drug economy is so essential, is mainly for teaching purposes. The prescriptions are, in general, therapeutically balanced and pharmacologically sound.

In the appendix are informative tables relating to standards of normality at different ages for almost every conceivable variable in the process of the child's growth and development.

Current hospital practice in relation to certain dietetic measures is summarized. These include the high carbohydrate diet, management of chronic dyspepsia, diets for celiac disease, the raw apple treatment of diarrhoea, and post-operative dietetic control of pyloric stenosis.

Notes are appended on such diverse topics as blood transfusions, mandelic acid and sulphonamide therapy, biochemical, pathological and radiological examinations, and some aspects of the poisons regulations.

Within a very small space, the volume concentrates a large summary of useful information of value to the student and to the busy practitioner.

Notes on Books, Current Journals and New Appliances.

THE JAPANESE AND THEIR INTERNEES.

DR. CHARLES I. McLAREN has written a short pamphlet describing his experiences as an alien internee in Korea, where he had lived for many years as a medical missionary.¹ The worst that befell him was the infliction of considerable hardship and discomfort; but some of his colleagues were not so fortunate, and were forced to endure tortures. Koreans also were persecuted, and Dr. McLaren pays a tribute to the tenacity of purpose and loyalty of Korean Christians. The pamphlet provides interesting information about Japanese police methods, as well as some sidelights on the Japanese character that may be studied with advantage.

¹"The Adelaide Children's Hospital Pharmacopœia": Third Edition; 1942. Adelaide: The Adelaide Children's Hospital, Incorporated. 5½" x 3½", pp. 181. Price: 7s.

²"Eleven Weeks in a Japanese Police Cell", by Chas. I. McLaren, M.D.; Second Edition, Revised; 1943. Melbourne: S. John Bacon (Marshall, Morgan and Scott Limited). 7½" x 4½", pp. 44. Price: 1s. 6d.

¹"Pictorial Handbook of Fracture Treatment", by Edward L. Compere, M.D., F.A.C.S., and Sam W. Banks, M.D.; 1943. Chicago: The Year Book Publishers Incorporated; Melbourne: W. Ramsay (Surgical) Proprietary Limited. 8½" x 5½", pp. 351, with 171 illustrations. Price: 30s. (A).

²"Materia Medica for Nurses", by A. Muir Crawford, M.D., F.R.F.P.S.G.; Fifth Edition; 1942. London: H. K. Lewis and Company Limited. Crown 8vo, pp. 148. Price: 4s. 6d. net.

³"The Essentials of Modern Surgery", edited by R. M. Handfield-Jones, M.C., M.S., F.R.C.S., and A. E. Forriett, M.A., M.Ch., F.R.C.S., Lieutenant-Colonel, R.A.M.C.; Second Edition; 1943. Edinburgh: E. and S. Livingstone. 9½" x 6", pp. 1120, with 624 illustrations, of which many are in colour. Price: 40s. net.

The Medical Journal of Australia

SATURDAY, JANUARY 15, 1944.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: Initials of author, surname of author, full title of article, name of journal, volume, full date (month, day and year), number of the first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

CLINICAL JUDGEMENT VERSUS MATHEMATICAL PROOF.

THOSE who have not undergone the discipline of training in medicine and had satisfactory experience of practice, are apt to aim shafts of criticism at the conclusions of medical men, more especially in connexion with treatment. It is perfectly true that in the past there has been much empiricism, but what is not so generally recognized and admitted is that such empiricism has always been subjected to the probation of accumulated experience and the exacting discrimination of shrewd practitioners. Empiricism gave us quinine for malaria, ipecacuanha for amebic dysentery, digitalis for cardiac dropsy and mercury for syphilis, and these stood the testing and have been acclaimed as therapeutical triumphs. A purely *post hoc ergo propter hoc* reasoning has only very rarely determined the acceptance or otherwise of a prescribed measure. To accuse the medical worker of ignorance of formal logic is quite beside the point, for the intellect can operate with precision in the absence of knowledge of the architectonic of either deductive or inductive logic which after all constitutes the grammar of thought rather than being a guide to its application. Men of science, and particularly those devoted to medical and biological problems, use controls and safeguards to avoid fallacy which they would be utterly incapable of describing in terms of syllogistic canons, and, moreover, as was so ably pointed out by Edgar Poe, who had a remarkably analytic mind, correct conclusions are reached by convictions "arising from those inductions and deductions of which the processes are so shadowy as to escape our consciousness, elude our reason or defy our capacity of expression". By which of the lauded roads of classic logic, asks Poe, does the solver of a cryptogram arrive at success? How did Champollion decipher Egyptian hieroglyphs and how did Kepler guess, as he confessed he did, that the orbits of the planets are ellipses?

A particularly interesting question presents itself when we investigate the possibility of proving mathematically

the value or lack of value of any accredited remedial procedure. Liebermeister in 1877 pointed out clearly that ordinary, straight-out statistical methods cannot be applied to the patients of any one doctor or group of doctors as the numbers are insufficient and the qualifying conditions so varied. He suggested that the mathematical theory of probability should be used in the assessment of the results of treatment and gave a rather complicated formula to suit the limited numbers of examples which are likely to be available. Some forty years later a special session of the Swiss Medical and Biological Society was devoted to this problem, and contributions to the discussion were given by both mathematicians and clinicians. It may be conceded that the scientifically correct presentation of the value of a new drug or surgical manoeuvre demands mathematical handling, for the mathematician and physicist assert with emphasis that unless there is a numerical evaluation, knowledge is not quantitative and is therefore incomplete; but though this may be granted in theory, there remains the fundamental consideration that most of our knowledge is not numerical. The perceptive organs of our bodies are magnificent as qualitative instruments, but evolution has not been guided to the development of quantitative senses. The basis of cognition, as Spencer trenchantly pointed out, is the ratios between sensations and not their absolute values, and these sensations can be evoked by exceedingly minute impinging energies. A foot pound of work represents thirteen and a half million ergs; a naked nerve fibre, such as exists in the cornea and subserving sensations of pain, is excited by one one-thousandth of an erg; but the human retina is responsive to one two-hundred-millionth of an erg or one three-thousandth of the smallest amount of light energy which on ordinary exposure can affect a photographic plate. The ear can detect a change of pressure equivalent to an ascent or descent of one thirty-thousandth part of an inch. The human nose, though degenerate, has a sensation aroused by one four hundred and sixty millionth part of a milligramme of some odorous bodies. We are properly astonished at this acuity of perception, but what we generally fail to realize is that the human brain is constantly solving mathematical problems of bewildering complexity. The physician may not be able to give a numerical estimate of the number of cures following a certain treatment as compared with the consequences of absence of this treatment, but his judgement usually allows him to arrive at very correct conclusions. He knows that the individual cases vary in severity of the disease, in the intrinsic powers of resistance and in the character and gravity of complications; these would make a mathematical analysis very difficult on account of the introduction of more and more variables into the algebraic *modus operandi*, but a shrewd judgement solves the problem.

It is refreshing to find Professor Rudolf Staehelin putting the matter as follows in a recent publication:¹ "It is therefore doubtful if a statistical handling of the material according to the calculus of probabilities would in all circumstances give a more correct result than the impressions which a skilled observer gains as a result of his experience." Professor Staehelin refers to "the

¹ Rudolf Staehelin: "Grundsätzliches zur Bewertung des Erfolges von Arzneimitteln", Schweizerische medizinische Wochenschrift, 1943, page 549.

integrating power of memory"; and this expression must be taken literally, for there are perpetually taking place in our cerebrum integrations which put the mathematician to shame, and not only are conscious and recollected perceptions subjected to this cerebral sifting and summation, but subconscious and forgotten perceptions as well. To assign to the brain a mathematical capacity of a high order is no exaggeration. Let us take as a homely example a boy throwing an empty jam tin into the air and then hitting this with a stone flung shortly afterwards. The data for mathematical analysis are the elevation and initial velocity of the jam tin and the air resistance it encounters; the elevation and initial velocity of the stone and the air resistance affecting this; the time interval between the departures of tin and stone from the hand. The irregular shape and varied rotation of the tin can also add complexities, as also the possibility that the trajectories of tin and stone may not be in the same plane. The solution of this problem would tax the powers of an able mathematical physicist, but the youngster who probably could not traverse the *pons asinorum* carries out the act with success. In this there is nothing supernatural, no intervention of the miraculous; it is a complex mathematical problem solved by the boy's cerebrum integrating previous experiences and subjecting these to a rigorous assessment of which he is utterly unconscious. In the same way the wise physician watching the reactions of his patients, no one exactly similar to the other, reaches conclusions he cannot analyse or describe to a cross-examining barrister or inquisitive physicist. When mathematical treatment is possible let it by all means be carried out, for the conclusions can be checked and recorded and are not the exclusive possession of one person, but let us keep in mind the wise aphorism of Oliver Goldsmith that the main use of mathematics is to give precision to discoveries already made.

Current Comment.

SOCIAL PLANNING IN SWEDEN.

IN June of last year the social policy of Sweden in wartime was described in these pages in the light of a report by Tage Erlander, Swedish Minister for Social Affairs. Another report has now been published.¹ It appears that for some years a government committee has been at work in Sweden under the chairmanship of Mr. Bernard Eriksson, a former Minister of Social Affairs, planning a reform of the country's social measures with a view to the coordination of the various forms of protection that they may become more effective. The present report is the last of six interim reports, and we are told that the present inquiries have not been completed. This is a subject of such importance to Australian practitioners of medicine, as indeed it is to social workers in all countries, that the chief features of the government committee's report have been summarized.

The committee emphasizes that, in view of the proposed more rational subdivision of the country for the purposes of local government, its suggestions have had to be submitted more rapidly than perhaps would have been desirable, and therefore the survey has been of a summary character. No detailed report will be ready until certain inquiries have been completed.

The body of the report is based on two draft bills prepared by the committee; one relates to "social welfare

areas" and one to social boards. The first bill provides for the combination of the smaller communes into social welfare areas of 3,000 to 4,000 persons, if necessary. The area would take over the control of social welfare and public health formerly held by the communes comprising it, but in other respects the communes would not be affected. The draft bill on social boards envisages the setting up in each commune of a social board to take over the duties of the poor relief board, the pensions board, the temperance board, the unemployment committee and the family allowance board. However, if it was found to be necessary in any commune, the appointment of special boards for these various functions would be allowed.

A brief résumé of the history and development of social welfare activities in Sweden during the last thirty years shows that a considerable number of social benefits are in existence alongside the system of poor relief, in part replacing it and in part extending the scope of public assistance. The lack of connexion between the agencies administering these various activities entails a number of disadvantages. Moreover, it is clear that the line adopted some decades ago has been more difficult to follow than was expected at the time. The only branches of social insurance proper in Sweden are the compulsory old-age pension and industrial accident insurance schemes, and the voluntary sickness insurance and unemployment insurance schemes. The old-age pensions are inadequate, and the membership of the recognized sickness funds is also unsatisfactory. A large proportion of wage-earners are still not covered by the recognized unemployment funds. The committee points out that its terms of reference enable it to consider a most comprehensive reform of social welfare, and that therefore the cost to the community and the community's capacity to bear the cost are within its purview. Although it is impossible to judge what the country's economic situation will be at the end of the war, yet the committee is emphatically of the opinion that now is the time to plan the reform of social welfare, to make an inventory of existing problems and to investigate the various technical methods of solving them. Further, existing circumstances are no reason for refraining from giving effect at least to substantial parts of the plan. The committee holds that one of the main objects of a modern system of social welfare must be "to help to bring about social security for the citizens of the country". Thus, more attention will have to be paid to the preventive aspects, and in addition the system will cover sections of the population who used not to be affected, when the chief aim of the authorities was to relieve want. "... the system must not lead to any blunting of the individual sense of responsibility."

The question of social insurance in social welfare has been studied. The committee outlines, as an alternative measure, the institution of a system of direct allowances, "payable according to specified rules and without the means test characteristic of poor relief, and financed out of tax revenue". The cost would be met by all members of the community in proportion to their taxable capacity, and thus no contributions would be demanded from the lowest income groups. The choice between social insurance and the system outlined is largely one of finance; but conditions differ between Sweden and Great Britain, where, in the drafting of the Beveridge Plan, social insurance was preferred. In Sweden the costs of the old-age pension scheme are shared between the insured persons and the authorities, and the committee is of the opinion that the same principle should be followed if a general sickness insurance scheme is introduced; it does not see that employers should be called upon to make any contribution. The question of compulsory unemployment insurance is rather different; here the scheme would cover only employed persons, and the committee believes that the costs should be shared among the insured, their employers and the State. These considerations show that administrative difficulties would arise in the organizing of social welfare as a universal insurance scheme. But the committee holds that "the self-help which social insurance implies is so important to the individual and to the com-

¹ *International Labour Review*, September, 1943.

munity that the principle of insurance must be given a considerable place in the future system of social welfare in Sweden". The fact that the low-income groups would have to share in the costs is not regarded as a serious argument against the principle of insurance. Taxation should be so adjusted that the citizen's contribution to public expenditure is proportionate to his capacity to pay. "Even if the low-income groups are given complete or substantial exemption from taxation, their sense of community with the rest of the population is strengthened if they have an opportunity to contribute to the welfare measures which are directly intended to protect them in the event of sickness or unemployment and in old age. Even if only a limited part of the cost of a particular form of benefits is met out of voluntary or compulsory insurance contributions, insurance has the advantage, as compared with financing the scheme solely out of tax revenue, that the persons who receive the benefits have the satisfaction of feeling that they have themselves contributed towards them. These psychological factors should not be underestimated." Would that social planners in Australia were convinced of the truth of these views! On these and other grounds the committee considers that the insurance principle, where it is already operating, should be allowed to remain; but it holds that the principle should not be extended to the system of children's allowances.

The committee, in the light of these considerations, has examined the existing social insurance measures. With regard to the voluntary, State-subsidized sickness insurance scheme, the committee finds that the membership of the sickness funds will not reach the optimal level on a voluntary basis. The protection afforded to members is necessarily unsatisfactory in some respects, especially from the point of view of the amount of cash benefit, and many members will need poor relief even in cases of short illness. The committee is investigating the question of compulsory sickness insurance and also the coordination of sickness and accident insurance in certain respects. The question of old-age pensions is also being studied, and later an inquiry will be made into compulsory accident insurance for persons engaged in agriculture, handicrafts *et cetera*. One of the committee's most difficult and yet most important tasks is "to draw up guiding principles for future unemployment policy with a view to attaining uniformity in this field". The first problem to be solved is the possibility or otherwise of introducing compulsory unemployment insurance, and the scope of such a scheme if it could be introduced. The committee realizes that it would be difficult to combine under a single insurance agency the separate branches of social insurance. It recommends that the administration of sickness insurance should be in the hands of those controlling local sickness funds; this would mean the retention of the present organization, which has been built up on the voluntary principle. The existing voluntary unemployment insurance scheme covers the whole country; it is organized in trade funds belonging to the trade union federations. If insurance was made compulsory, these funds would in all probability have to take in all employed persons who were liable to insurance, not only members of the particular trades. The risk covered in these circumstances would be so variable as between different trades and localities that a system of autonomous local funds would be impossible. The committee provisionally recommends the extension of social insurance through separate agencies for the different branches of social welfare; but it points out that future development in Sweden and elsewhere may overcome the present objections to the merging of the different branches of insurance into a single scheme.

With regard to the question of relief, the committee states that the term "poor relief" should be abolished "for purely objective as well as psychological reasons". A form of relief based on a means test will still be needed in the future Swedish system of social welfare, and the committee suggests the use of the term "social assistance". More attention than hitherto should be paid to the preventive aspects. Persons in need of assistance should be given an opportunity to work. With regard to young

people in particular, the unemployed should be provided with vocational training and should be helped to obtain work, as well as being given maintenance. "The infirm, the disabled, and the convalescent also need to be helped to get, not so much some temporary support, as vocational training and retraining and a place in the processes of production. In all activities of the kind indicated here, there should be much more recourse to the collaboration of the medical profession than has hitherto been the case." The committee believes that if the foregoing principles are the foundation of the assistance given, it will be possible by degrees "to convert the present poor relief system, which has consisted far too much in the passive payment of allowances, into an active and living form of social assistance".

"NOVOCAIN" INJECTION FOR MINOR INJURIES.

UNDER conditions of service it is not usually practicable to have men on duty who because of some illness or disability are able to work only part time. Thus a disability such as a minor sprain may necessitate the patient's admission to hospital and may entail considerable economic loss. The treatment of recent sprains of the ankle joint by the injection of a local anesthetic agent is not a recent innovation. Those practitioners who have been using this procedure with success for many years have no doubt of its efficiency in shortening the convalescence after this injury. On the other hand this method of treatment is not universally employed, the reason for which is probably an unfamiliarity with its beneficial effects.

The subject of "Novocain" injection for recent minor injuries has been discussed by F. C. Murphy and P. W. Postlethwat,¹ who direct attention again to its value, especially in military service. These authors point out that the aim of the American Army medical service, and for that matter of all army medical services, is to return the soldier to his unit fit for duty in the shortest possible time. Under active service or training conditions minor sprains are quite a common injury, and there is plenty of scope for a therapeutic measure which will accelerate their recovery. With minor ligamentous injuries there are concomitant injuries of blood vessels and nerve fibres of the area. These cause a vasodilatation and are followed by a local slowing of the blood stream and an increase in the osmotic pressure resulting from the damaged tissue cells. Consequently, oedema occurs, which together with the anoxia from the circulatory stagnation further damages the nerve fibres, the vessel walls, the muscles and the ligamentous structures and initiates a vicious circle. Leriche originally suggested the injection of a local anesthetic agent into such a lesion so that by the temporary paralysis of the nerve fibres the vicious circle would be broken. As Murphy and Postlethwat point out, the reflex muscle spasm associated with such an injury is also a cause of anoxia which by producing further damage to the tissues starts another vicious circle; this may also be interrupted by the injection of a local anesthetic agent. After the injection, the return to normal vascular tone and the increased motility of the part result in an improved circulation and better oxygenation, which is followed by a resorption of the oedema fluids and extravasated blood and a return to normal function of the part.

If fractures and major ligamentous injuries are excluded and this procedure is reserved for recent minor sprains, the surgeon will agree that the local injection of up to twenty cubic centimetres of a 1% solution of "Novocain" will usually produce an immediate amelioration of symptoms and a shortening of their duration. Apart from the humanitarian and economic aspects such as a shortening of convalescence conserves manpower, and a therapeutic procedure with this advantage is at least deserving of popularity at the present time.

¹ *Surgery, Gynecology and Obstetrics*, October, 1943.

Abstracts from Medical Literature.

GYNÆCOLOGY.

"Octofollin."

M. R. TALISMAN (*American Journal of Obstetrics and Gynecology*, October, 1943) has investigated the value of the synthetic oestrogenic substance, "Octofollin". The clinical material consisted of 131 patients; 105 were at the natural menopause, 12 had a surgical menopause, three had an X-ray menopause and 11 were suffering from a variety of conditions. The author found that "Octofollin" is an effective oestrogen when given either orally or by injection, and that it is much less toxic than diethylstilbestrol at the therapeutic levels. One to five milligrammes per day is the average therapeutic range for oral administration. Patients who do not respond satisfactorily to oral treatment may benefit by the intramuscular injection of two to five milligrammes of the substance in oil one to three times per week. A group of 21 selected patients from whom all ovarian tissue had been removed were carefully studied; large overdoses of "Octofollin" were given for varying periods from the fourth day after operation, and an investigation was carried out to discover in the blood picture, the hemoglobin level, the blood pressure, the urine and the icteric index, any abnormal changes indicative of toxic reactions to the drug. Sixteen of the patients were followed in the gynecological endocrine clinic after their discharge from hospital, some of them for six months. No evidence of any toxic change was found. In one case in this group nausea and vomiting occurred; they were stopped by the reduction of the dose to half. The resultant dose was still above the necessary level, and later increase in the dosage failed to induce a recurrence of nausea or vomiting.

Endometrial Tuberculosis and Sterility.

E. RABAU, I. HALBRECHT AND J. CASPER (*The Journal of the American Medical Association*, July 17, 1943) have examined by strip curettage 208 sterile women, and 20 of them were found to be suffering from tuberculous endometritis. The authors state that the diagnosis of genital tuberculosis is difficult, except when a tumour is present, and this is rather rare. Genital tuberculosis in general produces few clinical symptoms, and is usually undiscovered or discovered only by chance during operation or post-mortem examination. Even among women with active tuberculosis of the lungs, tuberculous endometritis does not appear to be of frequent occurrence. The large number of cases of tuberculous endometritis found by the authors in a series of sterile but otherwise healthy women leads them to believe that there is a more than accidental connexion between latent tuberculosis of the female genital tract and sterility; in other words, they think that many sterile women whose sterility has no obvious cause suffer from latent genital tuberculosis. They also draw attention to the prevailing opinion amongst pathologists and clinicians that the Fallopian tubes are much more fre-

quently affected than is the endometrium, and that all women suffering from tuberculous endometritis suffer also from endosalpingitis, whereas the converse is not always true. It is still undecided whether the endometritis or the accompanying salpingitis is the cause of the sterility.

Sulphonamide Drugs in Gynecological Surgery.

W. R. RICHARDS (*American Journal of Obstetrics and Gynecology*, October, 1943) has investigated the value of the use of powdered sulphonamide drugs locally in gynecological surgery. The investigation covered 62 surgical procedures, and 16 of these were disregarded because of wide differences in the type of drugs or the manner in which they were used. The cases were compared with another unselected series. In view of the principles laid down by Lockwood in 1941, and also in view of his findings concerning the value of sulphonamide drugs used locally in surgical procedures, the author considers his own results surprising. In only one group of patients did the drugs appear to produce favourable results, and that was a group of five patients suffering from pelvic or generalized peritonitis. Otherwise the use of these drugs appeared to bring about neither favourable nor unfavourable effects. The author points out that possibly the fact that his findings differ so much from those of Lockwood may be due to various pathological factors peculiar to the types of case investigated, or to the use of too small amounts of the drugs.

Endometriosis.

W. WELDON PARCER (*Western Journal of Surgery, Obstetrics and Gynecology*, March, 1943) found that 50% of a series of 40 women undergoing two pelvic operations over a three-year period were suffering from endometriosis. The patients were taken consecutively, only those with malignant disease and those past the menopause being excluded. The three types of external, extra-uterine pelvic and intrauterine endometriosis occur in pre-operative diagnosis in that order of frequency. Summarizing the pathology, the author describes (a) normal but misplaced endometrium, which reacts to ovarian influences, (b) haemolysed and partially dehydrated products of endometrial functions and (c) the neighbouring tissue affected by the irritation resulting from local menstruation. In many areas the lesions are invasive to a limited extent depending on ovarian function. The symptoms and physical findings vary greatly, depending on the location and the number of lesions and the fact that there is very commonly some associated pelvic pathological change of quite a different nature, the most common conditions being fibroids and pelvic inflammations. Green Armytage is quoted as reporting a frequency of 8.9% of endometriosis in 5,000 consecutive patients. The commonest symptoms are listed as (a) increased or irregular bleeding; (b) dysmenorrhoea, (c) painful coitus, (d) sterility, (e) previous abdominal section, (f) pelvic pain on jarring, (g) pregnancy or dysuria, (h) painful defaecation or progressive constipation. All these symptoms are typified by the fact that they make their appearance some time after menstruation is established, their first appearance is at

or near a menstrual period, they are aggravated by menstruation, and finally they are progressive, becoming more severe with each flow. The physical findings vary greatly, but an important point is that in the same patient they may differ at different times in the menstrual cycle. Apart from visible evidence of the typical tumour, the most important are pain on examination, limitation of uterine motility or fixed retroversion, or findings suggestive of malignant disease with a long history and no cachexia. Treatment is considered under three headings: (i) Prophylaxis: pelvic manipulation or douches at a time too close to the menstrual period are thought to be a cause of the condition and should be avoided. (ii) Watchful waiting: this should be carried out no longer than is necessary to make reasonably sure of the diagnosis. (iii) Active treatment: this may be by irradiation or surgery. Irradiation is not the method of choice and should be limited to "bad risk" patients, those with extensive inoperable involvement and those whom surgery has failed to cure. Surgery, which must be "individualized", depends, among other things, on the patient's age and attitude towards future pregnancies. The possibility of pregnancy, following a conservative operation, appears to be only small, and the author considers that this should be explained to the patient before she makes her choice. If it is possible to remove widely the whole of the endometriosis, this may be done without removing all the ovarian tissue; but if it is not possible, it is wise to remove both ovaries and not disturb the endometrium.

OBSTETRICS.

The Relationship of the Oestrogens and Progesterone to the Oedema of Normal and Toxæmic Pregnancy.

HOWARD C. TAYLOR, JUNIOR, ROBERT C. WARNER AND CATHERINE WELSH (*American Journal of Obstetrics and Gynecology*, April, 1943) summarize the results of their experiments on oedema of pregnancy in both normal and toxæmic patients. In a previous article they had postulated that the retention of sodium and water during pregnancy was due to the oestrogenic material produced by the placenta and its loss during the puerperium to the disappearance of the oestrogens. In the present study the relationship has been further investigated by the administration of large doses of the substances during pregnancy and the puerperium. In an introductory discussion, the authors state that in a normal pregnant woman there is an increase in the available extracellular water in proportion to the body weight from 26%, which is the average figure for non-pregnant women, to 33%. There is also an altered capacity of the pregnant woman to eliminate sodium. After parturition, diuresis sets in. Large quantities of sodium appear in the urine during the next few days and there is a considerable loss of available extracellular water. The plasma volume, which is increased during pregnancy, diminishes during labour and subsequently returns to its higher level owing to the return of the excessive quantities of interstitial fluid to the vascular stream. This, in

turn, leads to the diuresis. In the toxemias of pregnancy, the water and salt retention is even more marked, but the mechanism appears to be somewhat different, because although there is increased water in the tissues, the plasma volume is decreased. The authors suggest that the water retention is due, therefore, to a barrier between tissue and blood stream, rather than between blood stream and kidney. Experiments on dogs and monkeys have shown that the oestrogens and, to a lesser extent, progesterone have well-marked water and sodium retaining effects. Coutarov and Rakoff are quoted in saying that progesterone increases the rate of diffusion of sodium and chloride into the peritoneum and support the opinion of the authors that such agents have an effect upon membranes in general. In a previous publication the authors showed that a change of sodium balance and the post-partum diuresis in women corresponded to a fall in excretion of oestrogen and pregnandiol. It was therefore concluded that certain of the placental hormones were factors in the retention of water and salt during pregnancy. The object of the present article is to report the results of the administration of oestrogens and progesterone on the excretion of sodium during pregnancy and the puerperium. It was thought that if the post-partum diuresis and sodium loss could be prevented or delayed by giving large quantities of oestrogen or progesterone during the puerperium, the association of the original salt and water retention would be more or less established. Although the administration of large doses of oestrogen and progestin during the puerperium failed to alter the concentration of these hormones in the urine, it was thought that the amounts given were physiologically effective. In the first place, they caused a failure in lactation. Secondly, a comparison of the sodium loss with that previously recorded for normal untreated women showed a marked decrease after large doses of oestrogen and a slight decrease after progesterone administration. Likewise in toxemic cases the same type of results were obtained. However, attempts to alter the sodium and water retention in both normal and toxemic patients by giving large doses of hormones before delivery were not successful. This was thought to be due to the fact that the amount of hormone given, although large, normally represented only a very small fraction of the amount being constantly manufactured by the patient herself. Before concluding the authors have summarized the other theories that have been propounded to account for the tendency to oedema in pregnancy. They allow that the increase in extracellular water in pregnancy may be wholly due to the delayed elimination of salt. A decrease in colloid osmotic pressure due to a reduction of plasma proteins has been proved by other workers to have no appreciable importance in the ordinary well-nourished pregnant woman. Impairment of renal function has not been proved to occur in normal pregnancy and the degree present in toxemia would be quite inadequate to produce any significant oedema. An increased capillary permeability apparently does not occur in normal pregnant women, although in toxemic patients it would possibly be the cause of

both the oedema and the proteinuria. An increase in venous pressure also undoubtedly favours oedema in the feet and ankles, but not in other areas. Finally, the authors conclude that the general tendency of normal pregnant women to retain sodium and water appears to be best explained by the fact that they are constantly under the influence of enormous quantities of the steroid sex hormones. However, the increase in the tendency to sodium and water retention in toxemia does not find a complete explanation on the basis of a further rise in hormone effectiveness. The sudden change to hypertension, proteinuria and haemoconcentration indicates that a new mechanism is at work. Furthermore, in most cases of pre-eclampsia, rates of sex hormone excretion are not increased, but probably decreased. Although the oestrogens and progesterone probably continue to contribute to the sodium retention, the greater oedema of that disease cannot be considered simply an exaggeration of that found in normal pregnancy. In these cases additional factors are probably at work in women who are already physiologically conditioned to retain water readily.

Full-Term Abdominal Pregnancy.

A. J. KOBAX (*American Journal of Obstetrics and Gynecology*, October, 1943) reports the case of a Negress, aged twenty-seven years, who had a full-term abdominal pregnancy. She had had one previous pregnancy, which terminated by an early spontaneous abortion. About two months after her last regular menstrual period (second pregnancy) she had an episode of severe pain in the right lower quadrant of the abdomen, which subsided spontaneously in about two days. Thereafter the pregnancy was uneventful in the patient's opinion; life was felt in the fetus at the usual time. About seven months after her attack of abdominal pain she had pains resembling labour pains and vaginal hemorrhage, which ceased spontaneously. She was discharged from one hospital, it apparently having been thought that a threatened premature labour had subsided, and was told to return when the pains recurred. Perception of fetal movements ceased permanently at that time, although for a brief period the patient's breasts contained milk. Then her abdomen decreased in size and she lost weight. Three months later her menstrual periods returned, and some time after the third period she was admitted to another hospital, complaining chiefly of pressure on the urinary bladder, which caused her to have frequency and urgency of micturition. She believed also that the abdominal mass was causing her to have constipation. After examination a diagnosis of abdominal pregnancy was made, and the patient was submitted to operation. The right Fallopian tube flared out towards the fimbriated end like a horn; at this region a narrow, circular, ring-like depression was found, where the fetus and placenta emerged. The fetus was discernible through the amniotic membrane, to which bowel and omentum were adherent. The membrane was incised and the fetus removed. The placental tissue was easily separated from the adherent bowel and omentum and from the posterior wall of the uterus and the right broad ligament.

Hæmostasis presented no difficulty. The left Fallopian tube was enlarged, probably from chronic hydrosalpinx. The right Fallopian tube was removed, together with the placenta. The crown-rump length of the fetus was 19 centimetres. The patient's convalescence was uneventful. Six months after her discharge from hospital the patient was reexamined, and was found to have some residual pelvic inflammation centred chiefly round the left Fallopian tube. Otherwise she had no discomfort. The author concludes that the sequence of events was somewhat as follows: (i) The episode of severe abdominal pain in the first trimester of pregnancy was probably due to tubal abortion. (ii) At almost full term a spurious labour occurred and ceased spontaneously, and the fetus apparently died at that time. The patient had no sepsis, and when examined had a fifteen months' gestation. If she had been examined while the fetus was alive, or soon after its death, the placenta would not have been disturbed in any way. The intervening period permitted the adhesions to become devascularized, and made removal of the placenta safe.

Cæsarean Section.

R. W. MOHLER (*American Journal of Obstetrics and Gynecology*, March, 1943) reports the result of 1,322 Cæsarean sections. The incidence was 5.8%—9.58% amongst 785 private patients and 3.6% amongst 537 ward patients. The death rate over the whole ten-year period was 1.96%. There was a low percentage of the so-called low type of operation. This is explained by the fact that there are men on the staff of the hospital concerned who are especially capable of managing difficult deliveries, but not difficult surgery. The author holds that the low type of Cæsarean section is a more difficult operation than the classical operation. An inexperienced surgeon subjects the patient to greater danger in performing a low section than in carrying out a classical operation.

Fibroids in Pregnancy.

J. H. RANDALL AND L. D. ODELL (*American Journal of Obstetrics and Gynecology*, September, 1943) discuss enlargement of uterine fibroids in pregnancy. The discussion is based on seventeen cases of uterine fibroids removed during pregnancy. Eight of the pregnancies were terminated by Cæsarean hysterectomy (viable fetuses), one by myomectomy and hysterotomy and eight by hysterectomy (non-viable fetuses). The fibroids varied in size from 1.0 to 15.0 centimetres in diameter. Degenerative changes of some degree were present microscopically in ten of the seventeen cases. There was no evidence of hypertrophy of the muscle fibres within the fibroids and no hyperplasia of the connective tissues. Oedema could be seen in only one fibroid. The authors conclude that any suspected enlargement of asymptomatic fibroids during pregnancy is only apparent.

Aneurin (Vitamin B₁) and Toxæmia of Pregnancy.

R. KAPILLER-ADLER AND J. A. CARTWRIGHT (*Edinburgh Medical Journal*, May, 1943) observed no beneficial effects when they treated nineteen patients with mild or severe pre-eclamptic toxæmia with aneurin. In some severe cases they thought that harm resulted from the treatment.

British Medical Association News.

SCIENTIFIC.

A MEETING of the New South Wales Branch of the British Medical Association was held on November 18, 1943, at the Broughton Hall Psychiatric Clinic. The meeting took the form of a series of clinical demonstrations. Part of this report appeared in the issue of January 8, 1944.

Neurosyphilis.

Insidious Onset of Dementia Paralytica.

It was pointed out that one was apt to expect neurosyphilis to produce an obvious picture of *dementia paralytica* or locomotor ataxia, or in the vascular form a hemiplegia or other gross manifestation. It was necessary, however, to remember that the onset of *lues* of the nervous system might be extremely insidious and in the early stages might lack any strikingly distinguishing features. In view of the present favourable prospects of therapy, it was essential to make an early diagnosis.

The first of a series of patients suffering from neurosyphilis, and one whose condition illustrated these points, was a female, aged fifty-four years, who had been admitted to the clinic with the history that she had been depressed and retarded for some months; she had previously been active and energetic, but for some time had neglected herself and her home. These symptoms were characteristic of a depressive psychosis, and that was the diagnosis made on her admission to the clinic. The only abnormality found on physical examination was the condition of the pupils, which were small and slightly irregular and reacted sluggishly. A routine Wassermann test applied to the blood serum produced a positive result, and the cerebro-spinal fluid also reacted to the Wassermann test; the cell content of the fluid was increased, the test for globulin produced a positive result, and the response to the gold sol test was represented by the figures 4332210000.

It was pointed out that the serological reactions indicated a diagnosis of active neurosyphilis, probably of parietic type. The psychological symptoms, although apparently depressive in nature, were more likely to have been early manifestations of dementia. Stress was laid on the fact that pupillary changes were present; they were the earliest and therefore the most valuable physical signs of neurosyphilis, and whenever they were noticed they indicated the necessity for making serological tests. With adequate pyrexial and arsenical treatment the prognosis in this case was good.

Early Locomotor Ataxia: Rapid Reversal of Serological Findings.

A female patient, aged thirty-three years, had been shown at a clinical meeting at Broughton Hall in 1942 as suffering from early locomotor ataxia. For two years previously she had suffered from recurrent attacks of vomiting associated with severe abdominal pain, and the condition had been considered to be functional. On her admission to the clinic on July 17, 1943, her pupils were unequal (the patient had noticed this for two years), and the right pupil reacted to light, but not the left. The knee jerks and Achilles jerks were absent. No objective loss of joint muscle sensation was apparent. The Wassermann test produced positive results with the blood serum and the cerebro-spinal fluid. The response to the gold sol test was represented by the figures 5554321000. A diagnosis of early locomotor ataxia with gastric crises was made. The patient was inoculated with malaria on September 7, 1942, and she had her first rigor on September 26. After two more rigors the treatment had to be interrupted on account of persistent vomiting (gastric crisis). At a later date pyrexial treatment was resumed by the administration of intravenous injections of antityphoid vaccine. A course of intravenous injections of trypanamide was commenced in July, 1942, and there were several interruptions; seventeen injections had been given by January, 1943. The patient was discharged from the clinic on November 27, 1942, and was readmitted on December 14, 1942; she had had a recurrence of attacks of vomiting, and on her readmission was in the depths of a severe gastric crisis, which lasted for about two weeks. Her condition was aggravated by severe furunculosis, in particular by an abscess involving the right upper eyelid. She was discharged again on February 12, 1943. A second course of fourteen injections of trypanamide was given between May 2, 1943, and July 31, 1943. A further serological

investigation on October 10, 1943, gave completely negative results with serum and cerebro-spinal fluid. At the time of the meeting the patient still had inequality of the pupils, but both reacted to light. The knee jerks could not be elicited. She had had no crises since her discharge from the clinic in February, 1943.

It was pointed out that the patient had given an exceptionally rapid response to combined pyrexial and arsenical treatment. Pyrexial treatment was difficult to carry out, since it evoked gastric crises, and in fact much less of it than usual had been given. It was possible to speculate as to whether the severe intercurrent furunculosis contributed towards the improvement in the serological condition.

Congenital Neurosyphilis with Recurrent Angiospastic Hemiplegia.

A male patient, aged twenty-three years, had been admitted to the clinic on October 15, 1943. In 1940 he had had two attacks of "fainting" on successive days, and when he recovered from the attacks he was unable to talk for about five minutes, and afterwards his speech was slurred for a time. He also had attacks of numbness and paralysis of the right arm and leg, which usually lasted for about five minutes, but sometimes for as long as twenty minutes. Until February, 1943, he had recovered full use of his right arm and leg between the attacks; but since then he had lost fine control of his movements and had difficulty in writing his name. He had been free from attacks for eight months. For a week before his admission to the clinic he had had a persistent headache and had not slept well. Two days after his admission he had a seizure during which his right leg became powerless; this lasted for ten minutes, and he vomited afterwards (he did not usually vomit after his attacks). During the seizure his right plantar reflex was extensor in type. He was fully conscious all the time, but could not speak. He exhibited mild euphoria, but no other psychotic symptoms. A physical examination was made on the day after the seizure. The pupils were dilated, the left was larger than the right, and both were inactive to light and accommodation. Bilateral optic atrophy and bilateral ptosis were present. Efforts to protrude his tongue resulted in movements of protrusion and retraction with lateral deviations and coarse associated tremors of the lips. Speech was so slurred as to be almost unintelligible. Sensory functions were normal, except for some loss of light touch and joint muscle sensation of the right fingers and toes. Movements on the right side were performed clumsily; he walked with unsteady gait and on a wide base. The knee jerks and ankle jerks were exaggerated, bilateral patellar clonus was present, the plantar reflexes were flexor in type and the abdominal reflexes were brisk. The blood serum and the cerebro-spinal fluid both reacted to the Wassermann test. The gold sol test produced a result represented by the figures 5554321000.

In the absence of any history of acquired syphilis, and in view of the patient's age (twenty-three years), it was assumed that the *lues* was a parental legacy. As a rule, however, congenital neurosyphilis manifested itself by mid-adolescence. The interesting feature of the case was the occurrence of seizures which were apoplectic rather than epileptiform in character, and the brevity of their duration was suggestive of angiospastic hemiplegia or recurrent cerebral claudication rather than of the congestive apoplectic seizures common enough in *dementia paralytica*. The patient had been inoculated with malaria on October 20, 1943.

Dementia Paralytica with Epileptiform Seizures and Aphasia.

A male patient, aged fifty years, had come under care on September 15, 1943. During the last five months he had had a number of seizures in which he became unconscious and had convulsions. He made a quick recovery from the attacks, and had been able to return to work on the following day. It had been noticed that his memory had failed and that he often called things by the wrong names. In replying to questions his responses were frequently irrelevant and sometimes unintelligible. Recently he had had to give up his work. He had been a "heavy drinker" for years.

On his admission to the clinic, he showed no striking mental symptoms; his speech disability prevented him from communicating freely. He appeared to be mildly euphoric. The pupils were equal, but inactive to light. There was no tremor of tongue or lips, and speech was aphasic. The tendon responses were brisk, and the plantar reflexes were not elicited. It was found that he did not understand the purport of questions, and his answers were often irrelevant.

When given verbal orders he would carry them out incorrectly, but when he was made to understand the order by pantomime he performed the necessary actions correctly. The defect was diagnosed as auditory aphasia. The Wassermann test failed to produce a reaction with the blood serum, but produced a reaction with the cerebro-spinal fluid. The cell content of the fluid was increased, the globulin test produced a positive result, and the gold sol test produced a result represented by the figures 0443110000. The patient was inoculated with malaria on September 23, 1943, and had his first pyrexial attack on October 1; quinine was given after twelve rigors. When he was reexamined on October 28 his aphasic disability had greatly lessened; he now comprehended speech fairly well and carried out orders correctly, but he still made occasional mistakes.

It was pointed out that the case was one of neurosyphilis of paretic type. The condition was recognized after the occurrence of epileptiform convulsions; convulsive seizures occurring after the third decade were almost invariably due to toxic or organic cerebral disease, the most frequent conditions associated with them being neurosyphilis, cerebral tumours and alcoholism.

Tabs with Amyotrophy.

A female patient, aged thirty-eight years, had been admitted to the clinic with the history that for about twelve months her gait had been unsteady, especially in the dark. She had complained of severe pains in the legs, and during the last two years her speech had been affected. The patient herself dated her illness from about six months prior to the meeting, when she had an attack of severe abdominal pain which lasted for a week. About six weeks prior to the meeting she suddenly lost the use of her legs and of her right arm. She had a tingling feeling in her right hand and a "tight" sensation in both feet.

On her admission to the clinic, some defect of memory and poverty of thought were noticed, indicating mild dementia. Slight nystagmus was present on right lateral gaze, the right pupil was larger than the left, the left pupil was irregular in outline, and neither pupil responded to light. Slight tremor of the tongue and lips was present, and the speech had a slurring quality. Loss of light touch and joint muscle sensation in the right hand and both feet and a general reduction of sensitivity to deep pain were found. The patient had a sensation of tightness in the soles of both feet and in the right hand. Wasting of the muscles of the legs and of the right forearm was evident. Mechanical irritability was increased. So much loss of power had occurred that the patient could sit up with difficulty, but could not support herself in the erect position. She could not walk even with assistance. Movements were effected clumsily, and intention tremor was evoked by the finger-nose test on the right side. The knee jerks and other tendon responses could not be elicited. The abdominal reflexes were active, and the plantar reflexes were flexor in type. The Wassermann test produced positive results with the blood serum and the cerebro-spinal fluid; the response to the gold sol test was represented by the figures 3221100000.

The history was characteristic enough of mild locomotor ataxia with gradually increasing ataxia, lightning pains and gastric crises. The sudden loss of power in the lower extremities and right hand, however, were not usually seen in the tabetic picture; this development reflected rather an involvement of anterior horn cells, constituting the so-called syphilitic anterior poliomyelitis. It was pointed out that the patient was to be given a course of malarial therapy followed by trypanamide injections. The prognosis for recovery of function in the legs was not at all good.

Cerebral Syphilis: Vascular Type.

A female patient, aged sixty-two years, had been admitted to the clinic on September 16, 1943, with the history that for some years she had been giving up her interests and had become dependent, depressed and emotionally unstable. About six months prior to the meeting her left leg "gave way", and she became confused. She gradually recovered her power and mental clarity. It had been noticed that her speech was clumsy and that she had become tremulous.

On her admission to the clinic, her memory and orientation were good, and the only psychological abnormality noticed was emotional instability. Examination disclosed weakness of the left side of the face and of the left upper and lower extremities. The tongue was tremulous, but was protruded in the mid-line. Speech was rather staccato than slurred. Pronounced tremor of the left hand was present. The gait was unsteady. The knee jerks were active, and the plantar reflexes were not elicited. The left pupil was slightly larger than the right; both pupils reacted to light, the right

somewhat sluggishly. The systolic blood pressure was 180 millimetres of mercury and the diastolic pressure 110, and the brachial arteries were palpably thickened. At this stage a diagnosis was made of cerebral arteriosclerosis with residual hemiparesis following cerebral occlusion. However, a serological examination was carried out; the Wassermann test produced positive results with the blood serum and the cerebro-spinal fluid, and the response to the gold sol test was represented by the figures 5444310000. This finding suggested active neurosyphilis of paretic type. This was not in harmony with the clinical diagnosis, which was one of local luetic vascular disease of the brain. The patient was inoculated with malaria on October 4, 1943, and had her first pyrexial attack on October 20.

Arrested General Paralysis.

A male patient had been first admitted to the clinic on June 22, 1938, at the age of forty-one years. He then exhibited mild mental deterioration, and a serological investigation was carried out; the blood serum reacted to the Wassermann test and gave a "4-2" response to the Kline test and "slight positive" reaction to the Boas test; the cerebro-spinal fluid reacted to the Wassermann test and to the gold sol test with the figures 5554310000. The condition was diagnosed as *dementia paralytica*. He was given "inductotherm" hyperpyrexial treatment (100 hours at a temperature of over 103° F., including 26 hours at 105-8° F.) and twelve injections of trypanamide, each of three grammes. After his discharge from the clinic he had pottered about his home growing vegetables and flowers, and a year prior to the meeting he had taken a position as a gardener, from which he was recently put off. For some time he had had frequency of micturition. This had led him to consult his doctor and to be readmitted to the clinic with a view to further treatment.

On his readmission on September 17, 1943, his mental state was practically the same as at the time of his previous admission. His memory and orientation were good, but in discourse he wandered at large over a variety of unrelated subjects. His emotional condition was one of mild euphoria. His systolic blood pressure was 160 millimetres of mercury and his diastolic pressure 90; vessels were palpable. The pupils were unequal and small; the left did not react to light, while the right reacted sluggishly—reaction to accommodation was present. The tendon and superficial reflexes were brisk. Some tremor of the tongue and lips was noticed, but the speech was not slurred. Neither the blood serum nor the cerebro-spinal fluid reacted to any tests for syphilis. A diagnosis of arrested *dementia paralytica* was made.

The patient was shown to illustrate the end-results of successful treatment of *dementia paralytica*; the amount of dementia was determined by the degree of damage already done to the cortex when treatment was instituted. In this case the favourable response was secured with relatively little treatment. The patient had only one course of treatment with heat and trypanamide. The general experience at the clinic was that several courses of trypanamide therapy were required before the positive reactions to serological tests could be abolished, and in many cases at least two courses of pyrexial therapy were necessary. In the absence of the history of previous treatment, the diagnosis of arrested *dementia paralytica* would not be easy; the pupillary changes, which were almost invariably persistent, should, however, give a clue.

Toxic Confusion.

The final patient shown was a female, aged thirty-six years, who had been admitted to the clinic on September 28, 1943. The history of her recent illness was incomplete, but her mother stated that the patient had suffered from insomnia for months and had taken a great deal of medicine, frequently using hypnotics. About eight weeks earlier her legs had become weak, she began to sweat excessively, and she had to take to bed. She had been eating badly for some time. She became confused, did not recognize her home as such, saw her father in a vision and heard voices and whispering, although no one was near.

On her admission to the clinic the patient was confused, disorientated for time and place and unable to give a coherent history. She had lucid intervals, during which she was fairly accessible—she said her illness began with pains in her legs. Emotionally she was depressed and apprehensive, and often her expression and attitude were indicative of terror. She was restless, agitated and continually out of bed. Her habits were faulty. Physical examination revealed a state of considerable debility; there was a general loss of subcutaneous fat amounting almost to emaciation. Her skin was dry and harsh, and a generalized papular eruption was

present. Her tongue was red, smooth and moist, and it was tremulous, as were the lips also. Her speech was slurred and not easily intelligible. Generalized wasting and weakness were noticed, movements were unsteady and clumsy, and generalized coarse tremors of limbs and trunk were present. Tenderness was elicited on pressure over the nerve trunks, and the responses to light touch and pain stimuli were faulty. The tendon jerks were lively; the abdominal reflexes were not elicited. The pupils were irregular in outline and unequal in size and reacted sluggishly to light. Serological investigation produced negative results and no abnormality was detected in the urine.

The confusional state continued, with intervals of lucidity; these, however, were brief. The patient had difficulty in appreciating the passage of time; for example, at 10 a.m. she said it was 2 p.m. She was actively and often vividly hallucinated for hearing and sight; she had distressing but fleeting delusions about her children. On several occasions she falsified her recollections. Her emotional state was one of fear, amounting at times to terror.

The mental state of the patient was a characteristic enough confusional psychosis with at times a suggestion of the Korsakow type (pseudo-recollections and fabrications of memory). There was evidence, too, of polyneuritis. It was at first suspected that the condition was alcoholic confusion and polyneuritis, but no history of alcohol addiction was obtained. It was stated, however, that the patient had been addicted for some months to the excessive use of sedative drugs, and it seemed likely that on her admission to the clinic she was suffering from chronic barbiturate poisoning.

The comment was made that it was not uncommon to see patients enter hospital with pronounced ataxia and tremor, and on inquiry one found that they had been taking large amounts of barbiturates. This was an important point, as further use of barbiturates was obviously strongly contraindicated. The probable course of events in the case under discussion was, firstly, an anxiety neurosis with anorexia and insomnia leading to excessive use of barbiturates; the anorexia probably was sufficient, not only to lead to general debility, but to cause a vitamin deficiency (B_1) resulting in the development of polyneuritis; the confusional state was probably partly determined by drug intoxication and partly secondary to cerebral changes of the same order as those in the peripheral nervous system. The basic treatment of polyneuritis was the administration of vitamin B_1 , and this had been employed. At the clinic it had been found that insulin was a valuable adjuvant, and ten units had been given per day. Good nursing was required to protect the patient during the stage of restlessness. The patient made a rapid recovery.

Public Health.

THE LIQUOR REFORM SOCIETY.

THE following statement is published at the request of the Council of the Queensland Branch of the British Medical Association.

Since alcoholism is injurious to the health and welfare of our people, the Council of the Queensland Branch of the British Medical Association considers that it is the duty of the medical profession to play an active part in controlling this great social evil.

The Liquor Reform Society, which has been formed in Queensland by leading citizens representing all sections of the community, is advocating certain practical objectives for reform which the Council, after careful consideration, has decided to support.

These measures, while not limiting unduly the freedom of the individual, will, if adopted, exercise sufficient control over the manufacture and distribution of alcohol so that it will no longer be a menace to public health and dignity.

The measures advocated are as follows:

1. That the liquor trade should be controlled in the interests of the public by a Federal Commission responsible to Parliament.
2. That the alcoholic content of beer be reduced to an amount not greater than 5% proof spirit.
3. That all spirituous liquors and fortified wines be rationed on a plan similar to that in Sweden.
4. That the closed bar system be eliminated.
5. That an educational campaign be instituted to demonstrate the evil, social and physical, effects of alcohol.

National Emergency Measures.

THE SUPPLY OF UNSWEETENED CONDENSED MILK FOR INFANTS.

THE following memorandum received by the Chairman of the Medical Equipment Control Committee from the Commonwealth Controller of Emergency Supplies is published for the information of medical practitioners.

[COPY.]

With reference to your memorandum No. 43/F.436-385 (9275) of 2nd December regarding the supply of unsweetened condensed milk for infants for whom such milk is essential, I have to advise that the Controller of Dairy Products has authorized both manufacturers of this product (Nestlé & Anglo-Swiss Condensed Milk Company and Federal Milk Co. Ltd.) to sell the necessary quantities of milk to persons who apply either direct or through a grocer or other channel. Applications to the firms will need to be supported by a medical certificate.

It will be noted that application to Food Control for individual permits is not necessary.

The matter of making any general distribution of this milk through baby health centres, etc., is still under consideration, but any applications received from such centres for milk for babies under their care will receive prompt attention.

Correspondence.

THE PRACTICE OF RADIOTHERAPY AND THE FUTURE OF CANCER TREATMENT IN AUSTRALIA.

SIR: It is announced that the radiotherapeutic staff of the proposed new cancer clinic is to be appointed on an exclusively full-time basis. We are given to understand that the design is to absorb as many of the practising radiotherapists as possible on this staff and to purchase their equipment for incorporation in the institute.

Bearing in mind that this institution is designed to absorb also all the radiotherapeutic facilities at present in public hospitals and all the corresponding beds, it is obvious that private practice in radiotherapy is in danger of complete extinction. Indeed this is the avowed and cherished intention of the Advisory Committee, who stated at a recent hospital meeting that no radiotherapist "would be able to make a living outside". The suggestion that some radiotherapists should practise partly on the staff and partly outside, met with the astounding retort that such part-time members would only "use the experience gained at the institute to practise in competition with the institute". These statements definitely convict the committee of the intention to eliminate all independent radiotherapeutic practice. This attitude they justify on the plea that no efficient radiotherapeutic work is possible in private practice, a dogmatic statement which is disproved by past experience. Provided the radiotherapist recognizes, like the surgeon, his personal and technical limitations, work of the highest order can be carried out. In any case the proper function of an institute of this character is to develop and educate the outside members of the profession, supplementing their private resources by the use of these special facilities which the State is willing to grant for the treatment of cancer patients. The hospital, in other words, is supplementary to private practice and should in no case supplant it.

To make matters worse, the senior members of the staff are to have the right of intramural private practice, which, in a State-wide scheme, represents no inconsiderable addition to the large salaries already laid down. In the absence of any outside practitioners of the art, these holders of official positions will, in effect, be granted a monopoly at the expense of the eliminated independent radiotherapist. It may be pointed out that not every radiotherapist is prepared to work full time in the institute even if he can obtain an appointment.

The fatal error in this scheme for such a closed institution is that it makes no effort to keep the outside private practice of radiotherapy alive, active and cooperative, but rather regards such practice as a source of competition and scorns any offer of part-time assistance from those not included on a full-time staff.

I venture to suggest that the staff establishment would be vastly improved by the creation of some part-time posts, not necessarily honorary, which may be called extramural associate radiotherapists. These posts would carry the right to admit patients to beds of the institution to be treated by the associates themselves, strictly in conformity with the technique and policy of the institute. We may accept the necessity for a full-time staff to develop and administer the institution, and we may even accept the necessity that they should have the right of private practice, but we cannot willingly accept that these official radiotherapists should be put in a position to become the sole radiotherapists of the State, with possibly the monopoly of all private practice.

If independent private practice is thus cancelled out we shall create a closed institute with a monopoly of knowledge and practice in one branch of medicine, closed to outside medical influence and possibly subject to political control. Philosophically as well as economically such a position is absolutely untenable.

There will be no local provision for fresh staff members except by a process of inbreeding inside the institute itself, subject to all the traditional defects of seniority, and thirdly, there will be no provision inside the State for those branches of radiotherapy apart from cancer treatment. This is a most important objection.

I trust that the establishment of this radiotherapeutic staff will be given further thought and cast in a more liberal and democratic mould. The proposed constitution is not in the best interests of patient, physician or State.

The reactions of the radiotherapists in Melbourne who are likely to be faced with a similar situation will be of interest.

Yours, etc.,

ERIC W. FRECKER.

135, Macquarie Street,
Sydney,
December 23, 1943.

THE CANCER PROBLEM.

Sir: Seeing that this State is again "getting busy" about the cancer problem, it is of interest to ask what these activities are likely to achieve. Perhaps the question may be answered by the review of the *British Medical Journal*, October 23, 1943, of the Summary Report of the Ministry of Health, which states that "the mortality from cancer shows no signs of yielding to the intensive work in recent years in this field". Perhaps only a little patience is needed, but one cannot help feeling that the cancer problem will not be materially helped by a reshuffling of our therapeutic cards. The reshuffle may be worth a trial if, in the vital statistics, there were no other item left to conquer. But so many items remain, and some of these would really pay dividends, and early ones at that, from outlay of money and administrative effort; tuberculosis, for example, which is socially a greater evil than cancer, in that it kills the parents of younger children, and, in the process, infects the children. What lives could be saved by "intensive work" in this field!

Yours, etc.,

V. J. KINSELLA.

235, Macquarie Street,
Sydney,
December 23, 1943.

VACCINATION AGAINST PERTUSSIS.

Sir: I think the letter by Dr. McLean in the issue of December 18, 1943, is timely. The technique of pertussis immunization is very varied, and the dosage given in numerous quarters would seem to be inadequate to give any reasonable degree of protection. A standard technique would be welcome.

In reply to Dr. McLean, I would like to give the following brief summary of my experiences over the past three years.

Vaccine Used.—"C.S.L." pertussis bacillus (phase 1) vaccine, C strength—10,000 million organisms per cubic centimetre.

Dosage and Interval.—Six injections at intervals of seven days—0.5, 1.0, 2.0, 2.0, 2.0, 2.0 cubic centimetres.

Age.—From six months upwards.

Reactions.—General: Anorexia has been fairly common. Fever, up to 102° F., has occurred in about one-fifth of the cases, usually after the third or fourth injection. This has never caused any anxiety.

Local: Redness and swelling have been frequent. A hard lump, persisting for a couple of weeks, has frequently occurred with the larger doses. This lump was not found when the injection was given intramuscularly, in arm or leg, and the redness and swelling was also much less.

Duration of Immunity.—This can only be guessed, but Professor H. K. Ward, of Sydney, has suggested (personal communication) that a child given the above course in the first year of life should have one injection of one cubic centimetre before commencing school.

Suggestions.—As the reactions from the larger doses to be used by Dr. McLean may be more severe, it may be advisable to increase the interval to, say, two weeks; and the intramuscular route may be preferable. Multiple injections to spread the dose (for example, one cubic centimetre in each arm) are troublesome to both patient and doctor.

Yours, etc.,

R. CECIL BLACK,
Medical Officer of Health,
Widgee Shire.

Gympie,

Queensland,

December 20, 1943.

INTRACAPSULAR CATARACT OPERATION.

Sir: I cannot help expressing my surprise at the smug satisfaction which seems general among ophthalmologists concerning the ordinary cataract operation.

A general surgeon would be ashamed to leave the remains of a gangrenous appendix permanently in the abdomen. Similarly capsular remnants act as a foreign body in the eyes, causing a quiet iritis or a sudden flare-up, and in all cases there is a slow degeneration of sight.

The intracapsular operation is the ideal. When successful, one gets a perfectly quiet eye with a jet black pupil and the interminable needlings so typical of the British school are not required. Needlings are a confession of bungling.

The ghastly drawback is the difficulty, and if you have no hands leave this operation alone. There should be only one examination for eye surgeons—in wood carving.

Finally, I think it should be impressed on the younger school that before many years the ophthalmologist who cannot do an intracapsular operation will not be considered an oculist's boot lace.

Yours, etc.,

J. J. O'GRADY.

Adelaide,

December 22, 1943.

SPECIALIST COURSES FOR SERVICE MEDICAL OFFICERS.

Sir: A letter in the *British Medical Journal*, October 9, 1943, by E. M. Leyland, prompts me to give vent, with your permission, to a similar thought.

The profession as a whole has guarded the interests of our colleagues in the services fairly well. But it seems apparent that there is a pressing need for a concrete and detailed plan to be prepared to help the younger service medical officers when the time comes for them to resume civilian life.

Having graduated in November, 1940, I find that all but a handful of my cograduates are in the services after brief resident experience. As I was not acceptable on medical grounds, I have been able to enjoy fairly comprehensive resident and "locum" experience, and am now established in my own practice. Letters which I receive from my contemporaries cannot always conceal their envy that my experience and knowledge should be growing rapidly, whilst they, as they put it, are "fast forgetting what little they ever knew".

Everyone realizes, of course, that the young men must do the work in the forward areas, and leave the base positions to those older, less physically active and more experienced. But what is to happen to my friends when they are discharged? Most of them are married, and the grim necessity of earning a living for their dependants would prevent them from accepting a resident position under the present conditions of payment. Even if they now had the opportunity to read, this would be of little value without practice.

Therefore, unless some provision be made for these men to have one or two years' hospital work at a reasonable salary—at least as much as they are getting now—they will be forced to plunge into private practice untrained and ill-

equipped, as they are acutely aware. They would be starting their professional life with a handicap which could not be surmounted in a life-time—an injustice to themselves and their patients.

These young medical officers, like all the others in the services, are earning their country's gratitude; so surely it is up to us to see that, when the war is over, they will be able to start on equal terms with those, like myself, who have had to stay at home.

Yours, etc.,

CHARLES RETCHFORD.

Ullmarra,
New South Wales,
December 28, 1943.

PENICILLIN IN THE TREATMENT OF INFECTIONS.

SIR: With reference to your leading article in the issue of this journal for December 11, 1943, your readers may be interested to know that preliminary work on the production of penicillin has been done in Australia at the Institute of Medical and Veterinary Science, Adelaide.

Since the early part of 1942 I have been investigating the anti-bacterial activities of various moulds, and, in addition to producing small quantities of penicillin, I have isolated a new anti-bacterial substance, penicidin. Progress reports of this work have appeared in this journal and in *The Australian Journal of Experimental Biology and Medical Science* during 1942 and 1943.

Part of the penicillin which we produce is devoted to a very small number of selected clinical trials; the bulk of the material is used in the laboratory for other research purposes.

In our few selected cases, the results of local treatment with penicillin cream amply support the evidence from abroad that it rapidly rids local lesions of staphylococci or streptococci; mixed in a viscous base it may be successful in clearing the nasopharynx of carriers of hæmolytic streptococci. Such treatment requires only a very small quantity of penicillin, which need not be highly purified. Treatment of systemic infections requires comparatively large amounts of highly purified penicillin of which we have insufficient for such work.

Yours, etc.,

NANCY ATKINSON (Bacteriologist).

Institute of Medical and Veterinary Science,
Adelaide,
December 24, 1943.

Naval, Military and Air Force.

APPOINTMENTS.

THE undermentioned appointments, changes *et cetera* have been promulgated in the *Commonwealth of Australia Gazette*, Number 271, of December 23, 1943.

PERMANENT NAVAL FORCES OF THE COMMONWEALTH (SEA-GOING FORCES).

Appointment.—Clarence Athol Annis Lyons is appointed Temporary Surgeon Lieutenant (D), dated 22nd November, 1943.

ROYAL AUSTRALIAN AIR FORCE. Citizen Air Force: Medical Branch.

Temporary Squadron Leader R. W. D. Fisher (251203) is granted the acting rank of Wing Commander whilst occupying a Wing Commander post with effect from 1st November, 1943.

Flying Officer T. H. Strong (416900) is granted the acting rank of Flight Lieutenant whilst occupying a Flight Lieutenant post with effect from 1st September, 1943.

DECORATIONS.

THE Department of the Army has announced that His Majesty the King has approved that the following members of the Australian Army Medical Corps of the Australian Imperial Force be mentioned in dispatches in recognition of gallant and distinguished services in the Middle East during the period May 1 to October 22, 1942. Ranks shown are those held when the notification was made.

New South Wales: Brigadier J. Steigrad, Lieutenant-Colonel D. B. Loudon, Lieutenant-Colonel C. G. McDonald, Lieutenant-Colonel T. Y. Nelson, Major J. F. Lipscomb.

Victoria: Colonel J. G. Hayden, Colonel W. E. Summons, Lieutenant-Colonel J. E. Gillespie, Major R. McK. Rome.

South Australia: Captain R. H. Formby, Captain J. D. Rice.

Medical Appointments.

Dr. Ian Morris Roberts has been appointed quarantine officer, Derby, Western Australia, under the *Quarantine Act*, 1908-1924.

Diary for the Month.

- JAN. 17.—Victorian Branch, B.M.A.: Hospital Subcommittee.
- JAN. 17.—Victorian Branch, B.M.A.: Finance Subcommittee.
- JAN. 18.—Victorian Branch, B.M.A.: Organization Subcommittee.
- JAN. 20.—Victorian Branch, B.M.A.: Executive Meeting.
- JAN. 26.—Victorian Branch, B.M.A.: Council Meeting.
- JAN. 28.—Queensland Branch, B.M.A.: Council Meeting.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Honorary Secretary, 135, Macquarie Street, Sydney): Australian Natives' Association; Ashfield and District United Friendly Societies' Dispensary; Balmalm United Friendly Societies' Dispensary; Leichhardt and Petersham United Friendly Societies' Dispensary; Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney; North Sydney Friendly Societies' Dispensary Limited; People's Prudential Assurance Company Limited; Phoenix Mutual Provident Society.

Victorian Branch (Honorary Secretary, Medical Society Hall, East Melbourne): Associated Medical Services Limited; all Institutes or Medical Dispensaries; Australian Prudential Association, Proprietary, Limited; Federated Mutual Medical Benefit Society; Mutual National Provident Club; National Provident Association; Hospital or other appointments outside Victoria.

Queensland Branch (Honorary Secretary, B.M.A. House, 225, Wickham Terrace, Brisbane, B.17): Brisbane Associated Friendly Societies' Medical Institute; Bundaberg Medical Institute. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

South Australian Branch (Honorary Secretary, 178, North Terrace, Adelaide): All Lodge appointments in South Australia; all Contract Practice appointments in South Australia.

Western Australian Branch (Honorary Secretary, 205, Saint George's Terrace, Perth): Wiluna Hospital; all Contract Practice appointments in Western Australia.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be Stated.

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